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GRADUATE EDUCATION AND TRAINING OF RADIOLOGISTS

B. R. KIRKLIN, M.D.

ROCHESTER, MINN.

With the relatively recent recognition of radiology as a special branch of medicine and the establishment of an authoritative body to ascertain and attest the competence of radiologic specialists, the education of future radiologists has assumed major importance. To present day radiologists the problem is momentous, because on the quality of training they give will depend the ability of their successors to meet responsibilities to future patients, to medicine in general and to radiology itself.

Pioneer radiologists had to learn slowly by trial and error, by experience that often was bitter. Their pupils, who constitute a large majority of the radiologists practicing today, learned almost exclusively by apprenticeship, and that usually short. For several years more or less systematic courses of graduate instruction have existed at various institutions, but these courses are rather diverse and their relative merits and adequacy have not yet been fully determined. Indeed, until three years ago when the American Board of Radiology prescribed certain fundamental requirements in the education of radiologists there was no uniform base on which courses could be constructed. Thus the whole problem is still so new and has so many angles that much thoughtful consideration will be necessary to solve it satisfactorily and completely.

In brief, the American Board of Radiology requires that the student shall be a graduate from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association, and after 1940 it will be required that he shall have completed an internship of not less than one year in a hospital approved by the Council. His special training in radiology shall comprise not less than three years of study in an institution recognized by the board and the Council and shall include (*a*) intensive graduate training in pathologic anatomy, radiophysics and radiobiology, (*b*) active experience of not less than twenty-four months in the radiologic department of the institution, and (*c*) examination in the basic sciences and clinical aspects of radiology.

It is to be noted well that the board has not attempted to plan a detailed course but has established broad minimum requirements, which, it is to be hoped, will not be taken as standard but will be exceeded, as far as possible. Criteria to be observed in selecting students, the apportionment of the three years of instruction and the subjects to be taught are stated only in general terms, and methods of teaching are not prescribed. Within the wide latitude thus granted, institutions may plan courses and vary details at will. Concerning some of these details, I am quite willing to offer my views, with the understanding that they will be regarded merely as the opinions of one teacher and with the hope that they will stimulate wise thought and action.

Among all factors involved, it seems to me that the most important is the selection of students for training. Of the many applicants now on the waiting lists of most institutions, only those who seem really to be promising should be accepted. Those who have reached rather mature age, who have failed in other medical fields, who are attracted by the stipend commonly allowed, who appear to regard radiology as an easy road to riches or who plan to cut their training short should be rejected incontinently. On the positive side I consider it essential that the student be young, industrious and keenly interested in radiology and have a natural aptitude for the work. Youth is necessary, for only at that period, as a rule, has the student sufficient alertness and plasticity of mind to acquire thorough knowledge of any specialty. Qualities that I regard as indicative of a natural aptitude for radiology include keenness of observation, marked ability in analysis, a well restrained imagination and a highly judicial temperament. Conservatism in judgment is absolutely requisite for reliable radiologic diagnosis. Shadows are illusive, and the imaginative, impetuous, incautious radiologic diagnostician can do a vast deal of harm. The qualities mentioned cannot be determined from application blanks, certificates and letters of recommendation, however voluminous, and no candidate should be accepted without a personal interview sufficiently thorough to reveal the principal elements of his innate personal equation. Despite all precaution unsuitable candidates will occasionally be accepted, and when the fact is discovered they should be taken off the roll. I lay stress on care in admitting graduate students because it is a practical and effective way of raising radiologic standards and is in line with the increasingly stringent requirements for enrolment in medical schools.

As to apportionment and sequence of the course, there is room for differences of opinion. I feel, however, that not less than six months should be devoted to study of pathologic anatomy, three to technic, twelve to diagnostic interpretation, nine to therapy and six to be applied by the student at will to any branch in which he is deeply interested or feels that he is deficient. This order of periods is desirable but often cannot be followed if the course is arranged on the quarter system.

A thorough knowledge of pathologic anatomy is an indispensable foundation for efficient radiologic diagnosis and treatment, and this part of the course should be given early. It should include study of the gross and microscopic pathology of specimens obtained at opera-

From the Section on Roentgenology, the Mayo Clinic.

Read before the Section on Radiology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1937.

tion or necropsy, comparison of anatomic with radiologic changes, radiography of cadavers and specimens, observation of the effects of irradiation on tissues, and research into some special radiopathologic problem.

In my experience, students are likely to show less spontaneous interest in technic than in other aspects of the work, but they should be required to spend at least three months in studying and applying the various technical procedures necessary for diagnosis and treatment. During this time they should also receive special instruction in radiophysics and radiobiology, either from lectures or from reading selected textbooks. The twelve months devoted to radiologic diagnosis should be applied to attentive observation in this field, to comparison of radiologic diagnoses with conditions found at operation or necropsy, and, whenever possible, to active participation in special procedures such as salpingography, ventriculography, intravenous urography, and operations controlled by radioscopy. Training in radiotherapy, including both roentgen and radium therapy, should consist of practical instruction in measuring dosage and selecting appropriate technics, together with as much supervised experience as can safely be granted to the student. The final six months of the course, the elective period during which the student is free to give further attention to any feature of the work that he may select, will usually be appreciated and well employed by him. Periodic examinations, as required by the Board of Radiology, are desirable to determine whether the student should continue his training or not. Any student who shows an aptitude for research should be encouraged to make original investigations. Such research often is a suitable basis for the thesis required for an advanced degree. In some institutions a student who has shown marked ability and has finished his course is appointed first assistant for a year or more. Those who receive the appointment with its more direct responsibility usually profit greatly from the experience that it affords.

As to methods of instruction, I am tenacious in the belief that the student should get his knowledge from experience by active participation in the work rather than from didactic teaching, especially that of the formal type. The informal seminar, at which a series of roentgenograms or cases representing various phases of a single disease are discussed and opportunity for comment or questions is given, is highly instructive and pleasing to students and should be repeated as often as circumstances will allow. Formal lectures on radiology or allied subjects cannot be dispensed with entirely, but, in the main, the student will profit more greatly from reading standard textbooks and current radiologic literature. To this end the radiologic department should have a special library that is readily accessible during working hours. The informal oral instruction that every student receives from his preceptors every day is perhaps the most impressive and most appreciated didactic feature of his course, because of its objective associations and the chance that it offers for clarifying uncertain points. It is absolutely essential that the student be required to use his reason as well as his memory, to think of the morbid anatomy rather than mere names of diseases, and to arrive at logical conclusions rather than opinions derived from superficial comparisons. But I feel that all didactic methods should be secondary and supplementary to active, closely supervised participation in the work, for the most thorough and most practical knowledge is that which has been tested by personal experience.

Whatever the detailed program of special training may be, the student should not fail to maintain and enlarge his knowledge of other fields of medicine. When he goes out to practice radiology he must not be open to the charge of narrowness so often leveled at all specialists. He should be deeply impressed with the fact that he is to become a consultant in virtually all branches of medicine, not a supertechnician subject to the orders of his colleagues. To meet his responsibility as a consulting physician he must know the diagnostic significance of symptoms, signs and laboratory tests and the efficacy of nonradiologic methods of treatment, as applied to all diseases with which he will deal. Consequently, he should attend meetings of the institutional staff and special lectures by leaders in medicine, note the results of medical or other treatment, and familiarize himself with the principles, applications and effects of various surgical procedures. By this extension of interest he will become far more capable both as radiologist and as counselor.

It may seem that the course I have sketched roughly is too idealistic in certain respects and impracticable to fulfil. But its chief elements are already embodied in courses now offered by some institutions, including my own, and at every school there is room for improvement. At all events, the education of graduate students should have high aims, whether completely attainable or not, and the radiologists of the world can leave no greater or more enduring monument to themselves than pupils whose ability will far surpass that of their teachers and who will add shining achievements to the glory of radiology.

EXPERIENCES IN TEACHING RADIOLOGY TO UNDERGRADUATE STUDENTS

EUGENE P. PENDERGRASS, M.D.
PHILADELPHIA

The teaching of radiology at the University of Pennsylvania School of Medicine could readily be entitled "Physical Diagnosis," "Anatomy," "Physiology" or any of the major specialties in which radiologic methods are employed in teaching. We feel that one of the chief functions of the medical school is training the student to become a good doctor and not a specialist. We have therefore emphasized radiologic methods of teaching wherever they will assist in giving the student a better understanding of his problem.

FIRST YEAR

Anatomy.—The class is divided into groups of eight students. Each of these groups receives three fluoroscopic demonstrations, a single demonstration lasting from thirty to forty-five minutes.

The first of these fluoroscopic examinations deals chiefly with the movements of the thorax and diaphragm, associated with respiration, and the heart and great vessels. As the students are the subjects and each one is looked at, a considerable range of variation is available.

At the second fluoroscopic demonstration, the digestive tract is observed. One student takes a barium sulfate meal before going to bed and serves to show the different features about the large intestine. A second student is instructed to come in without breakfast and

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V 1
193

is given successively a capsule containing barium sulfate, a barium cookie and a barium meal. The students thus have an opportunity to watch the slow passage of the capsule down the esophagus, noticing those points at which normally there is slight encroachment of outside structures on the lumen of the esophagus and concomitant hesitation of the capsule; likewise, the slow movement of the semisolid cookie down the esophagus; and, finally, the rapid passage of the liquid barium along the esophagus, with its more moderate progress into the stomach. This part of the demonstration is done with the subject in the erect and oblique positions. At each stage, however, the stomach is observed, with the subject in the dorsoventral position. This affords an opportunity to see the shape of the virtually empty stomach and, eventually, of the filled stomach as well. Further, the peristaltic movements of the stomach are watched; also the appearance and behavior of the duodenal cap and the movements of the opaque meal in the jejunum. Following such observations, made by the vertical fluoroscope, the student patient is examined in the horizontal position, both supine and prone, and variations in the shape and position of the stomach and changes in activity are demonstrated.

During the third fluoroscopic period, attention is directed to the various articulations and movements of the joints.

In connection with these fluoroscopic demonstrations, suitable roentgenograms are placed in the dissecting room, so that the students may study, at their leisure, the structures which they have seen by the aid of the fluoroscope. All this work in anatomy is done by Dr. Eliot R. Clark or by members of his staff. We supply whatever roentgenograms Dr. Clark wishes.

SECOND YEAR

Physiology.—Dr. Henry C. Bazett and his staff use radiology in teaching students by the demonstration of stomach and intestinal movements in animals. More recently, studies are being made on students themselves, with the observations extended over the morning period of six consecutive days.

Pathology.—Dr. Edward B. Krumbhaar states he uses radiology in the teaching of pathology, but not so much as he would like to do if there were more time at his disposal. He feels that, in teaching any subject, the important thing is "proportion." Radiology, in this connection, is taught by Dr. Philip J. Hodes, of the Department of Radiology. He tells the students what radiology contributes in the diagnosis of the various pathologic lesions, with demonstration of illustrative films. These correlated expositions are presented before the class sections receiving instruction in gross morbid pathology.

THIRD YEAR

Applied Anatomy.—This subject is taught by Dr. Oscar V. Batson. Every one is familiar with Dr. Batson's enthusiasm about the necessity of using radiologic methods in the teaching of anatomy. There is constant reference to roentgenograms in the work on the chest, with emphasis on the differences between the anatomy of the dissecting laboratory and the anatomy of the living thorax. In considering the heart, Dr. Batson has had the good fortune to show the students Dr. George Levene's movie film of cardiac movements in health and disease. Roentgenograms are used also for studying the distribution and rearrangement of various structures, which may be so investigated because of their x-ray opacity or their ability to be injected with a radiopaque medium. Dr. Batson is interested eventually in developing more demonstration material, converting the three dimensional anatomy into shadow anatomy and then into roentgenograms.

Didactic Lectures.—The entire third year class is given an elementary course in radiology, consisting of sixteen hours. Holmes and Ruggles' "Roentgen Interpretation" is used as a textbook. X-ray tubes and fluoroscopic screens are shown to the students and brief explanations given concerning their operation and control. No effort is made to go into the physics of the x-rays, on the assumption that the student has had training in this subject during his premedical days. Dangers in connection with radiology and methods of protection are stressed. A short discussion of the medicolegal aspect of radiology is presented. Further than this, an attempt is made to teach the students to value both the potentialities and the limitations of the roentgen examination, as well as those conditions in which its use is essential. Emphasis is placed on the correlation of clinical and roentgen observations rather than presenting a tremendous number of slides of various pathologic conditions. For instance, the student is shown films, or slides, of the chest of a patient who has no pathologic process in the heart or lungs. The films are arranged to demonstrate the effect of posture on the domes of the diaphragm and the cardiac silhouette, and how, in turn, these structures may modify the physical observations, such as percussion and auscultation. After this the student is shown roentgenograms of a pleural effusion. Films exposed with the patient in various postures are presented to demonstrate how position affects the shadow cast by the pleural effusion. Such a presentation serves to focus the student's attention on physical diagnosis rather than on roentgen diagnosis. The entire field of diagnosis is covered in this manner.

During this course of lectures, five students are selected each week to occupy the front row seats and, in order to emphasize certain points, questions are asked. To stimulate further interest on the student's part, questions and discussion are encouraged, and often at the end of the hour, or perhaps later by postal card, different problems are brought up. Such inquiries are answered at the beginning of the next lecture hour.

In addition to the foregoing, a few lectures are given on roentgen and radium therapy. Here again the fundamental principles of the effects of irradiation on various tissues are stressed, rather than an outline being given of technic of therapy in the different conditions in which its use is indicated. I believe that such an approach as this, in presenting the subject of radiology, is rational and, possibly, an obligation.

The third year students at Pennsylvania do not have ward work but are assigned as student physicians to the outpatient department. There is usually so much clinical detail, however, that little time is available for the instructors to show the students the roentgenograms made on their patients. Occasionally a student, interested in an unusual patient, will come to the radiologic department for demonstration and explanation of the roentgen observations by some one in the department.

At the end of the year a final examination is given on the course. The questions asked are general and of a type with which the general practitioner should be conversant.

FOURTH YEAR

During the fourth year the students become clinical clerks in the hospital wards. Each student receives at least forty hours of instruction. The general approach to the radiologic teaching is a correlation of the clinical and the roentgenologic observations on patients seen by these students in the wards of the hospital. The teaching is divided into the following groups: medical, pediatric, general surgery, urology and neurosurgery.

Those students in the medical section attend a radiologic and clinical conference once a week. An hour is devoted to the presentation of the case history, the physical and roentgen observations and a discussion of diagnostic possibilities or therapeutic approach. The discussion is led by the radiologist, chiefly in the form of questions, which are considered by the various ward chiefs in medicine. In addition, the medical staff holds a seminar with the students for two hours each week. This may be attended by the radiologist whenever cases are presented which need radiologic explanation. Various members of the medical staff hold a "sun parlor" conference once a week too, at which films of interesting cases are presented to students as a part of the clinical record.

A radiologicopediatric conference is attended by the chief of the department of pediatrics, interns and students. This group meets once a week for one hour. All cases that have undergone a roentgen examination are reviewed clinically and the films presented. Since the majority of the cases comprise an examination of the chest, the student has an excellent opportunity to check his physical observations with regard to the nature and size of the lesion which may be present. This session is sometimes devoted to a brief discussion of pathologic changes in long bones in relation to the roentgen examination. Occasionally a student or an intern may present a brief review of some subject, such as obstruction in the respiratory passages, in conjunction with current cases showing this type of lesion.

Radiologic aids in surgical diagnosis and treatment are presented at a weekly one hour conference attended by surgical staff members, students and a member of the radiologic staff. This has been divided into general surgery, urology and neurosurgery. In the former group, students are required to present a brief abstract of the clinical history and physical examination concerning current cases in the wards of the hospital. The films are presented and the cases discussed clinically by some member of the staff. It has been our purpose during this session to present all current patients who have had a roentgenologic examination, whether the result of the examination has been positive or negative. Such a procedure helps the student by indicating when a radiologic examination can be of assistance, and also the type of examination to be considered. Frequently two or more cases may be available which are more or less similar clinically. At such times the greater part of the hour is devoted to a discussion of one general subject, such as lung abscess, intestinal obstruction or gallbladder disease. In order to illustrate salient points, particularly with regard to surgical diagnosis, other films in our teaching records are presented. In general, controversial details are avoided, that the student may not be confused.

The roentgen diagnosis of urologic conditions has been presented in a more didactic way, on account of (1) the special nature of the examination, (2) the unfamiliarity of the average student with observations by intravenous or retrograde pyelography and (3) the lack of a proper selection of current cases. We have therefore attempted to present in one or two hours the normal appearances and variations that may occur. This is followed by diagnostic points concerned with urinary calculi, tumors, stone, and anomalies. Very little time is offered for open discussion, but questions by the students are encouraged during the conference.

In neurosurgical diagnoses we have used much the same procedure as in urologic teaching. Because of the unfamiliarity of the student with roentgen examinations of the skull, it has been necessary to review roentgen anatomy and point out the landmarks that most frequently aid in diagnosis. We present indications and contraindications for encephalography and ventriculography; the normal encephalogram, followed by illustrative cases to show cortical changes, such as atrophy or arachnitis, scars or tumors; the normal ventriculogram, followed by films of patients which show characteristic deformities associated with the more frequent mass lesions in the frontal, parietal, temporal or occipital areas.

A member of the radiologic staff is present at the neurosurgical conference, one hour each week. Selected cases are presented to the students and the films of these cases discussed by the radiologist as a part of the clinical evidence.

This year we have extended our teaching of the students on the surgical trimester to include ward rounds, one hour each week; pathologic conferences, two hours every fifth week, and elective tumor conferences, one hour each week. As each section in surgery changes every five weeks, the students in these sections have four hours of ward rounds, two hours of pathologic conferences and an elective five hours of tumor conferences.

Ward Rounds.—During the first hour, the students are brought into the Department of Radiology and shown various equipment used in radiation therapy. As each piece of apparatus is demonstrated, the students are shown how it is actually used. It is our feeling that each student should be familiar with some of the more important terms that are employed in radiation therapy, in order that he may know their meaning when reading current literature or when consulting with a radiologist.

The discussions during each of the remaining three ward round periods depends largely on the patients in the hospital who are receiving irradiation for infection or a malignant condition. Regardless of the type of malignancy under consideration, the approach to the problem and its discussion are approximately the same. But little time is spent on the usual diagnostic appearances in a late carcinoma. Most of our energies are directed to the signs indicative of the early lesions. Naturally, this involves discussion of procedures such as biopsy, Wassermann tests, and roentgen therapy as a therapeutic test. After the diagnosis is made, the treatment of the tumor in question is discussed. We do not immediately state that this or that is the treatment of choice. On the other hand, we try to promote discussion of all possible methods for treatment of tumors, arguing pro and con, until finally the students themselves reach what they think is the method of choice. In this connection the students are shown irradiation reactions and effects, and the methods employed in their care.

V 1
193

In actual practice, the procedure we follow is this:

1. The history and physical examination of the patient are given by the clinical clerk.

2. We then choose a student not familiar with the case to discuss the differential diagnosis. If his discussion is not complete, we designate the rôle of consulting physician to another student, whose job it is to agree or perhaps to bring up another possibility. If the diagnosis is still unrecognized, each member of the group expresses an opinion.

3. Another student then acts as the family physician, telling how he would finally prove his diagnosis. If he is not entirely satisfied, he chooses another member of the group as a consultant. If the discussion of these students is incomplete, the entire group is again asked for opinions.

4. After the diagnosis has been decided, another student acts as the family physician and is asked to treat the patient. If this student's therapeutic methods are not inclusive enough, we again assign the rôle of consultant to another student, who may act as the radiologist and, when necessary, we add still a third, who may act as the surgeon. With this plan we approach the problem in a practical manner.

Pathologic Conferences.—Sometimes there is nothing of tumor interest in these sessions. On other occasions the department of radiology is asked to explain why a certain type of treatment was carried out for a specific tumor removed at autopsy. At such times the rationale and arguments for the type of therapy used in the case are fully discussed.

Tumor Conferences (elective).—During the first portion of these conferences, patients with unusual tumors are shown. During these demonstrations the type of pathologic process and therapeutic measures are discussed. At other times the end result of a therapeutic procedure is demonstrated in order to illustrate what can be expected in the treatment of certain malignant conditions. The last half of the hour is turned over to a member of one of the specialties, such as a gynecologist or an otolaryngologist, who discusses the most recent advances in a particular type of malignant growth which he, as a specialist, has been called on to treat or about which he has been invited to act as a consultant.

Some of the fourth year students do not receive all their training in the University Hospital but are assigned to other hospitals for their clinical clerkships. Dr. M. Lowry Allen at the Episcopal Hospital, Dr. Paul Bishop at the Pennsylvania Hospital and Dr. Herman Ostrum at the Philadelphia General Hospital give clinico-radiologic conferences on diagnosis similar to that described with slight modifications arranged according to the teaching schedule of these various hospitals. The only major difference in the teaching is that there is less effort made to develop the therapeutic aspect of radiology.

At the end of each trimester, an examination is given. This usually consists of two questions, based on the subjects considered in the conferences. In addition, one question is given in the final written examination.

CONCLUSION

I should like to state, very humbly, that I know but little concerning the teaching of radiology. We are constantly changing our approach to this problem after careful consideration of its many phases with our medical and surgical friends. If we fail in our efforts, we have only ourselves to criticize, as our association with the entire staff, in the preclinical and clinical years, has been most cordial and stimulating.

3400 Spruce Street.

UNDERGRADUATE TEACHING OF RADIOLOGY IN THE MEDICAL SCHOOLS OF THE UNITED STATES

A SURVEY

CLAUDE MOORE, M.D.

WASHINGTON, D. C.

Since radiology is the newest major branch of the practice of medicine, there is considerable difference of opinion among the entire medical profession as to its value in the diagnosis and treatment of disease. The medical schools of the United States also place different degrees of importance on this specialty. To determine the status of the teaching of radiology, a survey was made by review of all the catalogues of all the medical schools in the United States giving a full four year course and rated as grade A by the Council on Medical Education and Hospitals of the American Medical Association. Since the medical schools could not all be visited, this had to be done entirely by the last available catalogue published by each medical school. The information secured from these catalogues was checked with the information furnished by the last Educational Number of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION [1] and the latest list of the Diplomates of the American Board of Radiology.[2]

There are sixty-eight class A medical schools giving at least a full four year course and an M.D. degree. Some of them have no connection with universities and some of them have but limited or no connection with large hospitals.

An attempt was made to determine both the quality and the quantity of teaching that was offered as well as the importance of this specialty in each school. Forty of the medical schools had a separate radiologic department organized under a separate head and equal in rank with the other departments in the school. One medical school makes no effort to give any instruction whatever in any branch of radiology. Its latest catalogue merely states, in a paragraph under medicine, "324. Radiology and Radiotherapy (Elective), one hour a week. The staff." The catalogue makes no mention of any staff in radiology. The other twenty-seven medical schools mention or list the teaching of radiology as a division or a part of some other department. Another school has only one statement to make with regard to radiology. This is under the department of surgery and says "This course embraces the principles of operative surgery, x-ray and anesthesia." The instructor of this course is listed as Associate Professor of Surgery (Roent). By far the majority of these twenty-seven classifications are under medicine or surgery, but some of them are mentioned under pathology,

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1. Medical Education in the United States and Canada, J. A. M. A. **107**: 661-715 (Aug. 29) 1936.

2. Diplomates of the American Board of Radiology, Am. J. Roentgenol. **37**: 116-123 (Jan.) 1937.

therapeutics, dermatology and anatomy, the reason for this apparently being that professors in these subjects teach their specialty in connection with radiology or that they are radiologists to affiliated hospitals. The variety of information given in the catalogue is even greater than would be suspected. Some devote a page or more to describing the course in radiology, while other catalogues have only a sentence or two.

The size and the rank of the staffs in radiology are even more variable than the amount of space describing radiology in the catalogues. Thirty-six medical schools give the rank of full professor to one or more members of the faculty in their departments of radiology. In two schools the title of Instructor in Radiology is the highest rank given to the member of the faculty teaching this subject. The other thirty-four schools list the faculty members under all the various classifications common to university rank below that of full professor. Several schools, even among those giving the rank of full professor, add in parenthesis following the title the words "radiology or roentgenology." It is impossible to tell whether this faculty member does teaching other than in radiology or whether the title of "professor of radiology" is not of sufficient dignity or value to be listed as such. The size of the staffs of the radiologic departments of the different medical schools vary all the way from one to ten members. Several schools, particularly those giving instruction in all four years of the medical course, have large, well organized staffs, with different members teaching special subjects in this field. In some of the large university medical schools the department of physics and experimental biology is closely affiliated with the radiologic staff. A few schools seem to allow the teaching of radiology by sufferance. One large university medical school with exceptional hospital affiliations has eleven instructors of surgery and eleven instructors in medicine of professorial rank and only one associate professor of roentgenology. Another medical school, already mentioned, has eighteen members of the surgical and medical staff ranking as professors, and the sole member of the radiologic staff is listed as instructor in roentgenology. The one medical school mentioned as not giving any course has no mention whatever of any radiologic staff or even of an instructor teaching radiology. As would be suspected, the larger faculties are in the medical schools of the largest universities connected with prominent hospitals. The ability of the faculty can be judged only by the professional connections of its members. The only information available was the latest list of the diplomates of the American Board of Radiology.[2] In six of the medical schools no member of the faculty was a diplomate of this board. Either they had not applied to the board, their acceptance had been postponed, or they had been turned down as ineligible or inefficient. According to the American Board of Radiology, twelve medical schools do not have staffs sufficiently well trained to use radium in the treatment of disease. This is said because the radiologic faculties of these medical schools are listed by the board as proficient only in roentgenology. In checking the faculty roster of all the medical schools it is interesting to note the number of higher ranking members who are not diplomates of the American Board of Radiology. Many of their junior associates have satisfied the board that they are proficient in radiology. One radiologic department of a medical school in a large city, with four professors and four associates or instructors, had no member of the faculty who was a diplomate of the American Board of Radiology. In some other schools it is only the junior members of the radiologic staff that are diplomates of this board. These young men appreciate the value of this membership in the future upbuilding of radiology in the United States.

TABLE 1.—*Extent of Instruction in Radiology Listed in Medical School Catalogues*

68	class A medical schools in the United States give a four year undergraduate medical course.
40	schools have a separate radiologic department.
27	schools list radiology under some other division.
1	school does not list any radiologic course of instruction or mention any radiologic faculty.
36	schools give one or more members of the radiologic faculty the rank of a full professor.
2	list the highest rank as instructor in radiology.

It is almost impossible to judge, with any degree of accuracy from the catalogues, the amount of radiologic instruction given medical students by the medical schools. Seven medical schools teach radiology in all four undergraduate years. Five more schools have courses in three different years. The other medical schools are about equally divided in number as to instruction in one or two years. Five medical schools make the course in radiology entirely elective. All others say they require some definite amount of instruction. The number of hours is very indefinitely stated or is so mixed up with other courses that no fair idea of the amount of instruction could be determined. The general average of all schools would probably be between twenty and fifty hours for all courses, both didactic and clinical. Several medical schools offer opportunities for senior students to be clinical clerks in the radiologic departments or affiliated hospitals, while another school offers an elective course for seniors to become proficient in roentgenologic technic.

All sixty-eight medical schools were checked with the latest roster of hospitals giving a residency in radiology accepted by the Council on Medical Education and Hospitals.[1] Thirty-two medical schools have no connections with these hospitals, leaving thirty-six that are affiliated. It was felt that, when a medical school has connections with a hospital radiologic department giving a residency in radiology, both the quality and the quantity of instruction available to students would be superior to those schools having no such connections. Usually the chiefs of the radiologic department of these hospitals are men of national or international reputation and they are sufficiently interested in the future development of radiology to see that the students become as well acquainted as possible with this specialty.

TABLE 2.—*Qualifications of Instructors in Radiology and Affiliation with Hospitals*

6	schools have no member of the faculty who is a diplomate of the American Board of Radiology.
12	schools have no member of their faculty who is fully qualified to use radium.
7	schools teach radiology in four undergraduate years.
5	additional schools teach radiology in three of the four undergraduate years.
32	schools are not affiliated with hospitals giving a residency in radiology, credited by the Council on Medical Education and Hospitals of the A. M. A.
36	schools do have these hospital connections.

V 1
193

It is hoped that this discussion and information, secured only through the catalogues prepared by the medical schools, will encourage the Council on Medical Education and Hospitals to make and publish a direct survey on the undergraduate teaching of radiology.

1801 Eye Street N.W.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. KIRKLIN, PENDERGRASS AND MOORE

DR. MERRILL C. SOSMAN, Boston: There are two separate problems in this symposium which should be discussed. Let us take up undergraduate teaching first. Every one realizes that any subject can be taught from a dozen different points of view. Anatomy, for example, can be taught from the point of view of morphology, of biology, of physiology or function, or from a purely roentgenologic point of view. Similarly, all of medicine can be taught, and taught well, from widely divergent points of view. For example, the approach may be through etiology, through pathology, through therapeutic channels or, again, through roentgenology. In undergraduate teaching, however, it is important to teach not radiology but anatomy or pathology from the radiologic point of view, an attempt being made to give the student the necessary information from another and different aspect and thus help him to correlate and consolidate his knowledge. In graduate teaching, an attempt should be made to impart to students not just the facts of radiology, considering it as a trade or as a laboratory procedure, but rather from the clinical point of view, and teach its limitations as well as its specific and positive values. In this way the teacher should attempt to turn out roentgenologic clinicians who, with experience, may become really consultants rather than the all too prevalent reader-of-films type. Two points in the graduate teaching of radiology, which I consider the most important of all, may be emphasized: 1. For the student of radiology, the most important thing is to choose, if he can, the man under whom he takes his work and who gives him the attitude of mind and the mental stimulus which is so much more important than the acquisition of facts. The man is the important thing, not the place or the course of work, however complete and attractive it may seem. 2. For the teacher of radiology, the one thing of utmost importance is not the detail and the order of the work to be given or the type and amount of instruction, but rather the careful selection of the candidate. I feel that the choice of the proper man to be trained far outweighs the thoroughness of his training, provided the opportunity to acquire knowledge is available and the candidate has the character to profit by the acceptance of responsibility in the department to which he is assigned.

DR. J. H. J. UPHAM, Columbus, Ohio: Dr. Moore presents rather a chaotic condition of affairs in his survey. This is largely a reflection of the general situation of medical colleges with regard to the teaching of specialties all along the line. The rapid growth of medical knowledge in general and the special fields in particular has led to demands on the present college curriculum that are difficult to meet. There is danger of overcrowding, if that has not already occurred. As a dean of a medical college, I am continually under pressure from this or that specialty for more teaching time. Not infrequently a dominating personality in some college will bring about a greater emphasis on his specialty. There is great necessity for a general understanding and evaluation of the needs of the prospective practitioner in considering the places in the curriculum of all the specialties. There is scarcely a field of medicine in which radiology does not enter in some degree, so that it must have an important place in undergraduate instruction. The teaching of this subject therefore embraces two concepts: first, as it affects the prospective practitioner and, second, as it looks toward a prospective specialist. In my opinion the latter enters into undergraduate instruction only as do the other specialties. That is, a teaching of basic principles, with the idea that should the student expect to enter this or that specialty he will have to take extensive postgraduate instruction. I believe, therefore, that the teaching of technic should be little more than brief basic instruction of a very general character, so that the principles may be gained with a knowledge of the dangers of attempting to practice them without thorough postgraduate training; that most of the instruction be along the lines of the value of radiology in the various fields of medicine and the need of proper interpretation of films. That the teachers of this subject should be thoroughly qualified goes without saying, and their titles should be commensurate with the importance of the subject. Such instructors would be able to recognize those students who are particularly qualified or have a flair to practice radiology and, by electives, prepare them for later development. The outline of instruction in the University of Pennsylvania given by Dr. Pendergrass follows my own ideals very closely. I feel, however, throughout that the emphasis should be on the illustration of the definite uses of radiology in medicine, the need often of radiologic consultation, and that the impression should not be given too easily that on the basis of even this quite thorough instruction the graduate is prepared without further training always to read films properly and certainly without extensive further training that he is prepared to practice radiology. Dr. Kirklin's paper suggests a high plane of postgraduate training and one that appears excellent.

DR. FRED J. HODGES, Ann Arbor, Mich.: As a teacher it has been encouraging to me to learn that the difficulties encountered in our institution are closely paralleled by the experiences of others. Dr. Moore has drawn attention to the striking lack of uniformity among medical schools in the matter of presenting the subject of radiology to undergraduate students. At the University of Michigan the faculty of medicine has recently begun revision of its curriculum to correct generalized overloading due to the addition of new subject matter over a considerable period of years. We find that decisions regarding the proper allocation of teaching time are difficult to reach not only in radiology but in all divisions of medicine. The teaching plan for undergraduate students outlined by Dr. Pendergrass corresponds closely to ours. We too attempt to place primary emphasis on the purely medical rather than the technical aspects of radiology. The required hours of instruction are nearly identical. I am in complete agreement with all the previous speakers regarding the scope and the ultimate aim of graduate teaching in this subject. Dr. Kirklin's plan is excellent both in theory and in practice. Ideals of graduate training in radiology as expressed by Dr. Holmes are exceedingly important if our subject is to deserve high ranking in the field of medical education. The necessity for accommodating student instruction to the time consuming activities of a busy clinical practice is a real problem, to be solved only by careful budgeting of time and the maintenance of a sufficiently large staff.

DR. THOMAS A. GROOVER, Washington, D. C.: I wish the authors would state in closing the discussion whether the present-day facilities for postgraduate study are adequate. A good deal has been said about the radiologist choosing a student, but something can be said, on the other hand, about the student choosing his instructor.

DR. ROSS GOLDEN, New York: I agree with Dr. Sosman that the choosing of the man is of prime importance. I went on record two or three years ago to the effect that I believe a man should be given a point of view in radiology before he spends his year in the fundamental medical sciences. We have tried that now for two years at the Presbyterian Hospital in New York. The first man who went through began his service October 1 and spent ten months in the diagnostic department and then went into the department of pathology, where he took part in the teaching, and then in the department of surgical pathology and then had his course in physics. Then he came back and went in the radiotherapy division. The second man who came through spent six months in the diagnostic division and then four months in the radiotherapy division. This spring, when plans for the third man to take the three year service came up for discussion, the question was raised as to whether he should have some radiotherapy before he went into the year of fundamental sciences. On consultation with the two previous men, he decided that he would like to have some radiotherapy first. The first man felt that he would have understood the pathology of radiotherapy better had he understood the technic, and the second man felt that he was helped very definitely by having had some practical experience in radiotherapy. Based on my own reaction, I feel that a point of view would be of definite help in enabling the men to get the most out of the

year in the fundamental sciences. I know that there are well informed people who think that this is of minor importance, but it has seemed to work out well as we have tried it in the past two years.

Dr. Charles L. Martin, Dallas, Texas: I believe with Dr. Pendergrass that every effort should be made to develop undergraduate medical students into good doctors. This can be accomplished in many instances by combining some of the subjects now taught separately. At the Baylor University Medical School the prescribed course in radiology deals only with diagnosis, while radiation therapy is included in a required course on tumors. The active staff of the Baylor Tumor Clinic holds one exercise each week for the senior class. The pathology, diagnosis, treatment and prognosis of tumors are discussed and actual patients are shown before, during and after treatment. The director arranges the clinics in advance, so that each one deals with a different type of pathology; and since fourteen men take part in the presentation, they represent a consensus of opinion. The radiation therapist has a very important rôle in this type of teaching and I feel that our students know a great deal about the proper care of patients with malignant growths by the end of the year. In my opinion this is much more important than the elaboration of the physical data so often included in a course in radiation therapy for undergraduates.

Dr. Edward L. Jenkinson, Chicago: I believe that the selection of the student, the candidate, especially in graduate work, is most important. I think a good man will be a good man in practically any well regulated department. When the men that I have had come before the board, I think it is easy to tell how well they are going to do by what they have done during their training period in the department. So I think the selection of the candidate is most important. During the formation of the curriculum, for instance, the orthopedist who on certain days has his lectures on bone conditions could take, say, forty-five minutes of the hour in teaching or giving to the student the orthopedist's side of the question, and the last fifteen minutes could be taken by the radiologist, who could give the student the important x-ray appearances of the disease under discussion. I think the same plan could be used in gastro-intestinal medicine. It certainly could be worked in in heart conditions and practically all the medical subjects. I believe in this way one could bring the students in closer contact with radiology as it applies to medicine.

Dr. Claude Moore, Washington, D. C.: It is unfortunate that more men of lesser prominence have not discussed this symposium. While attending this meeting I have had the opportunity to discuss the undergraduate teaching of radiology with a number of radiologists from smaller cities and towns who have come in contact with recent medical graduates who were not associated with larger hospitals and clinics in their undergraduate work. I have been surprised to find the amount of ignorance these radiologists report among these young physicians. One radiologist told me this morning that last week he talked with a young physician who had been out of medical school for two years and did not know that duodenal ulcers could be found by means of the roentgen ray. It is surprising the lack of knowledge of radiology among graduates of the more isolated medical schools not connected with large clinical facilities. It seems that this is not the fault of the radiologists of the country but is the fault of the administrators of the medical schools. This statement is confirmed and illustrated by the amount of time given by radiologists to medical schools, receiving in return, in many cases, a low university rank, and working in competition with a half dozen full professors in other branches of no greater importance than radiology. These radiologists are willing to give their time and interest to promote their specialty, with little or no personal reward.

Dr. B. R. Kirklin, Rochester, Minn.: Dr. Groover asked the question whether or not the facilities for training a sufficient number of radiologists are adequate. The other essayists have left that question unanswered, so I will attempt to answer it to the best of my ability by saying that I do not think the facilities are adequate at the present time. We hope, however, that it will be only a matter of a short time until this deficiency is overcome. It has been pointed out that it is necessary to provide for a fairly large replacement to supply the normal demand for radiologists, not taking into consideration the increased demand by clinicians for radiologic service. I would also state that the American Board of Radiology is now attempting to classify and to list those institutions or individuals who have what we consider to be adequate facilities for giving the type of radiologic training that should be given. Dr. Sosman is chairman of that committee, and I am sure he will shortly have a satisfactory report.

TEACHING UROLOGY TO MEDICAL STUDENTS

ROGER W. BARNES, M.D.
LOS ANGELES

The recognition of urogenital disease and its proper management are dependent to a large extent on the general practitioner, and the mental equipment he uses is, in turn, dependent to some extent on his training in medical school. This is especially true with the recent graduate, and the more practical and vivid his undergraduate teaching has been made, the more mental equipment he will have to cope with the daily problems of his practice.

A review of the bulletins of twenty-two representative medical schools reveals a wide variation in the assignment of time to the teaching of urogenital diseases. This ranged from a minimum of no time allotted for this course to a maximum of 110 hours. Table 1 gives a summary of this review.

Table 1.—*Assignment of Hours to Teaching Urogenital Diseases in Twenty-Two Medical Schools*

	Schools	
	Number	Percentage
No urology listed	1	4.5
Elective only	2	9.0
No didactic course listed	5	22.5
From 8 to 20 hours of didactic instruction	7	31.5
More than 20 hours of didactic instruction	10	45.0
No clinical course listed	8	36.0
Clinical required hours not given	4	17.0
From 10 to 30 hours of clinical teaching	3	13.5
More than 30 hours of clinical teaching	7	31.5

In view of the present trend toward more clinical teaching and less didactic instruction, it is surprising to note that eight, or 36 per cent, of these schools list no clinical course in urology. Of those schools listing clinical hours, the minimum is sixteen and the maximum fifty-nine, with an average of thirty-one. Five schools, or 22.5 per cent, listed no didactic course. Of the schools listing didactic hours, the minimum is eight and the maximum fifty-seven, with an average of twenty-three. Three schools listed no required course in urology, and of those requiring a course the minimum total hours is sixteen and the maximum 110 with an average of forty-eight.

Since medical students are taught to be general practitioners, it would seem that the number of hours for each specialty taught in the medical course should be in the same proportion to the total as that specialty is to the total of the practice of the general practitioner. In order to determine this, a questionnaire was sent to 120 physicians in general practice. A compilation of seventy-eight that were returned showed that an average of 8 per cent of their practice was urogenital in nature.

From the Department of Surgery (Urology), College of Medical Evangelists.

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V 1
193

The minimum was one-third per cent and the maximum 50 per cent. As there are approximately 2,500 total hours in the clinical division of the medical course, 200 hours, or 8 per cent, would be devoted to the teaching of urogenital diseases if this proportion were carried out. These figures are of course only a rough estimate at best, but they do show that the time devoted to the teaching of this subject is not too much in proportion to the entire course.

There has been a growing tendency to shorten the courses in the specialties and in some instances to have them taught by general men rather than specialists. It is impossible to cover more than a small part of the subject of urology when teaching medical students, but it is a mistake to shorten this course to such an extent that the essentials necessary to equip the general practitioner properly are inadequate. Even though teaching the more complicated urologic procedures is not attempted, still the urologist is the most suitable person to teach this specialty. As Boyd [1] has stated, the general practitioner does not have sufficient interest in the specialty and has had neither the training nor the experience necessary to present to the student properly the essentials of the management of urogenital diseases. A few urologists have sufficient pedagogic background or the natural ability to lecture so that the students can grasp and retain what is taught. Most instructors are not so endowed, however, and it is necessary to resort to other methods of teaching. The best solution to the problem is by case teaching; i. e., by having the student care for the patient himself, take the history, make the examination and prescribe and give the treatment. He must of course be supervised at each step and told of the mistakes he makes and of the way to avoid them.

Even in the largest clinics it is not always possible to have patients available with whom to demonstrate each disease as it is taught to the student. This is especially true in the smaller clinics, and for this reason it is necessary to supplement the case study and patient demonstration by other means of visual instruction. Lantern slides, motion pictures, drawings and models can be utilized in such a way that they can be made a very valuable adjunct to teaching and in fact are in many ways superior to the patient himself as a teaching aid. For example, a carcinoma of the penis or even a genital ulcer might not be available during the time a group of students is taking the clinical work in urology, but if these conditions are shown in a slide, or preferably in a motion picture in color, the student will make a mental picture which will be much more lasting than if a word description were given. A carcinoma of the prostate may not be available, but if the student can feel a model of this condition and take as long as he wishes without the fear of causing pain or inconvenience to the patient, he will receive a much deeper and more lasting impression than if he were given a word description of how such a prostate felt or were allowed a hasty feel of such a prostate in a patient.

TABLE 2.—*Number of Hours Scheduled for Course in Urogenital Diseases in Twenty-Two Medical Schools*

Clinical Hours			Didactic Hours			Total Hours		
Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average
16	59	31	8	57	23	16	110	48

1. Boyd, M. L.: Teaching Urology to Medical Students, J. A. Am. M. Col. **6**: 278 (Sept.) 1931.

The necessity for a careful history and physical examination is axiomatic, and these, together with the more simple diagnostic procedures, laboratory tests and routine treatments, should be emphasized. Palpating and massaging prostates, passing catheters and sounds, treating gonorrhea and giving bladder irrigations are the things the student will do when he becomes a general practitioner, and these are the things he should be taught while in training. In every school there will be found students who think it is a waste of their time to repeat these and who believe they have mastered them after seeing them done or after doing them only once or twice. The instructor should endeavor to change this attitude by impressing the value to the student himself of thoroughly mastering these routine procedures and to show him that when he is out in practice these are the things he will want to know more than anything else. To teach cystoscopy and surgical technic to the medical student in the short time allotted for the course in urology is almost impossible, and these procedures should be reserved for graduate teaching.

TABLE 3.—*Urogenital Diseases in General Practice*

Returned Questionnaires Tabulated	Proportion of Practice Urogenital in Nature		
	Minimum	Maximum	Average
78	⅛ of 1%	50%	8%

947 West Eighth Street.

ABSTRACT OF DISCUSSION

DR. GEORGE F. CAHILL, New York: The review of the assignment of time to the teaching of urologic diseases in our medical schools undertaken by Dr. Barnes is most timely. Urology apparently does not occupy sufficient time in most schools to supply the needs of students for its proper understanding. Most urologists agree that the teaching of the more complicated urologic procedure is not to be attempted within an undergraduate curriculum but properly belongs to graduate teaching, and that only the essentials for a proper understanding of the main pathologic, diagnostic and therapeutic procedures can be covered in the time that at present is allowed in the medical schools. It is, however, possible to present in the basic courses in the early years didactic lectures or teaching linking these departments with the specialties. These urologic lectures or demonstrations in embryology and anatomy and pathology should be given by the urologist. He best can give the point of view which is later to be developed as essential for the understanding and proper appreciation of the specialty. Modern teaching in medicine has slowly evolved clinical case teaching. Such teaching has evolved the clinical clerkship. Most medical schools have clinical clerkships in the four major courses: medicine, surgery, obstetrics with gynecology and pediatrics. Such clerkships should include urology. We feel that the student can secure a proper understanding of what the specialty covers only by a concentration of his time within the specialty, if possible for the whole day, with instruction by the residents and the necessary didactic or illustrated case teaching, even though the entire teaching time covers only two weeks. The complicated urologic procedures developed during the last twenty years have gone far beyond the attempt to teach complete familiarity with these to the undergraduate and belong properly in postgraduate work. Dr. Barnes is to be complimented for giving us this graphic, basic idea of how to examine a patient urologically, and I am pleased to see a combination of teaching with demonstration as evinced by the sound movies.

DR. NELSE F. OCKERBLAD, Kansas City, Mo.: The author's presentation of this subject is excellent and timely, and the motion picture was excellent. No one knows how much work it takes to make such a picture unless one has tried it. The teaching problem is the same everywhere. Teachers are largely

born, not made. The best reference books on urology are too expensive and too extensive. I have tried to get around this with a mimeographed manual or outline. The exhibit of Dr. Barnes dealing with the prostate is extremely ingenious and ought to be helpful to the medical student who has just broken into a new world when he first comes to the dispensary.

DR. R. M. LE COMTE, Washington, D. C.: Dr. Barnes has shown how little time is given to teaching this rather complex subject. Judging from my own experience his figures, particularly regarding clinical instruction, exaggerate rather than understate the actual time put in on the subject. It is important to remember that only a few of the undergraduates will ever practice urology intensively and that we should limit our efforts to giving them sufficient knowledge and skill to make rather safe general practitioners who are able to recognize genito-urinary diseases clinically and to establish a diagnosis and carry out treatment which requires a procedure that is not very complex and technical. If we try to do more than this we are very apt to cloud the issue rather than clear it. At Georgetown University the students work both in the dispensary of the University Hospital and in other hospitals, and also in the wards, giving as much time as practicable; but just as both Dr. Ockerblad and Dr. Barnes have said, the material is often either not available in sufficient amount or not the proper type at the proper time. In addition, we give thirty hours' didactic teaching each year. We stress the symptoms and the medical treatment. In considering the various organs, diseases are arranged in a systematic way according to the etiology and pathology. We believe that if this is understood the symptoms, diagnosis and treatment will be more readily comprehensible and more impressed on the mind. This is done mostly by quiz work; sections of the book are assigned for study and the students are then quizzed on the material. We find we have to vary the method not only with the different classes but in some instances with the different sections of each class. We have no way of measuring our results very accurately. In some instances we feel rather proud, notably when a recent intern was able to make a diagnosis of perinephric abscess which puzzled members of the medical and surgical staff both of our own hospital and of others. We were rather chagrined, however, when, day before yesterday, a man came in with acute gonorrhea and I found one of my students who had graduated less than five years ago had been treating his total acute posterior urethritis by autohemic therapy for three weeks.

DR. N. G. ALCOCK, Iowa City: I believe that this is the first paper dealing with the subject of teaching urology that I have heard presented in this section in fourteen years. It is a timely and important subject to come before the group. It is not so much a question as to how much time in hours is to be given to the teaching of urology as it is a question of how economically those hours can be used. In filling teaching posts in medical schools I am of the opinion that efficiency in the use of the students' time is not always a determining factor in the selection of the teacher and I am quite sure that the teachers are frequently and quite commonly selected on the basis of how many papers they have written and on how well they are known to the profession and of what advertising value they may be to the particular school with which they are affiliated. The demonstration by Dr. Barnes gave a good illustration of economy in time in teaching. His moving picture took, I think, about seven minutes. There was nothing particularly new in the subject matter he presented and the physicians in the audience probably learned nothing from it; but to the student who has no background for evaluation of signs and symptoms and information it would be very enlightening. The ordinary student in watching the moving picture of the urethra through which he was passing a catheter would learn more in the three minutes it was on the screen than he would in three hours of didactic teaching. That is the thing which counts. In our medical education discussions we are talking a great deal about the number of hours to be devoted to a subject and what will be taught, but very little, if anything, is said as to how it shall be taught. There are two primary qualifications that any good teacher should possess: He should be able to transmit information, to analyze the subject matter and to select only those things which are vital for the student to know and then to drive those things home. If he will analyze his material and pick out those important points, 50 per cent of his students should pass his course with a grade of at least B. Good teachers are the ones who give many high grades and fail very few students. The other qualification that the good teacher should have, and this is the great one, is the ability to stimulate the student. It is the divine spark in the teacher that will light up the fire in the student. It is something that is born in one and that one can never acquire. If a teacher does not have it he will never be a great teacher. If he does have it, it does not make much difference how he teaches; he will be a great teacher.

DR. ROGER W. BARNES, Los Angeles: I wish to thank the discussants. I agree with them that we should spend more time in this section on methods of teaching urology to both undergraduate and graduate students.

A SPECIFIC FEBRILE REACTION TO SULFANILAMIDE

DRUG FEVER

P. O. HAGEMAN, M.D.
AND
FRANCIS G. BLAKE, M.D.
NEW HAVEN, CONN.

During a study of a series of cases treated with sulfanilamide at the New Haven Hospital,[1] a characteristic febrile reaction, which will be described in this paper, was encountered in a fair proportion of the cases. The term drug fever will be used to denote this complication of sulfanilamide therapy. Long and

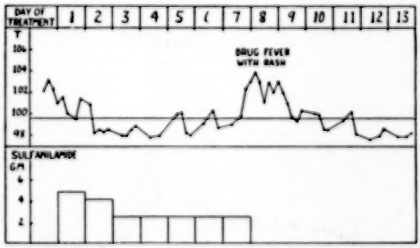

Fig. 1 (case 5).—Erysipelas and mastoiditis showing drug fever with a rash.

Bliss [2] have mentioned the occurrence of fever following prolonged administration of sulfanilamide, as well as fever which appears promptly after large single doses of "Prontosil." [3] Massell [4] reported four cases of drug rash in a series of fourteen patients treated with sulfanilamide, but no data pertaining to time relationships and presence or absence of accompanying fever were included.

In a series of 134 cases of various infectious conditions treated with sulfanilamide, the reaction to be described was encountered in twenty-one cases (summarized in the accompanying table), an incidence of

From the Department of Internal Medicine, Yale University School of Medicine, and the clinical services of the New Haven Hospital.
This study was made possible by a grant from the Clinical Research and Teaching Fund, Yale University School of Medicine.

1. Hageman, P. O., and Blake, F. G., to be published.
2. Long, P. H., and Bliss, Eleanor A.: Para-Amino-Benzene-Sulfonamide and Its Derivatives, J. A. M. A. **108**:32 (Jan. 2) 1937; Arch. Surg. **34**:351 (Feb.) 1937.
3. Disodium salt of 4-sulfamido-phenyl 2-azo 7-acetylamino 1-hydroxy-naphthalene.
4. Massell, B. F.: New England J. Med. **216**:487 (March 18) 1937.

15.6 per cent. Characteristics that distinguish this complication are fever occurring at a definite interval after the institution of sulfanilamide therapy with or without an accompanying morbilliform rash. In the majority of instances the reaction appeared between the seventh and tenth days of sulfanilamide therapy but in a few instances it came on as early as the fourth or as late as the thirteenth day. The onset of the febrile response varied considerably, as evidenced by variations in febrile response from normal to 106 F. As is shown in the table, the average duration of fever was from two to four days, with a definite prolongation in cases in which the drug was continued through the first few days of the reaction.

It will be noted that in four instances the reaction appeared from one to five days after the drug was dis-

Cases of Drug Fever Due to Sulfanilamide

Case No.	Age and Sex	Diagnosis	Dosage of Sulfanilamide* Prior to Reaction: Per Day Gm.	Per Day Interval	Per Day Days	Total Gm.	Total Days	Drug Fever: Day of Treatment Reaction Appeared	Height of Fever	Duration in Days	Rash	Drug Discontinued: Days Before Reaction	Day of Reaction	Days After Reaction	Comment
1	10 ♂	Acute purulent otitis media; beta hemolytic streptococci	0.9 0.6	q. 6 h. q. 6 h.	4 6	21.9	10	10	101.2	2	Morbilliform	..	1st	..	
2	16 ♀	Pharyngitis; beta hemolytic streptococci; cervical adenitis	1.2 0.6	q. 6 h. q. 6 h.	6 4	31.2	10	10	100.8	2	Morbilliform	..	1st	..	
3	8 ♂	Mastoiditis; beta hemolytic streptococci; sinusitis; tonsillitis	0.9 0.6	q. 6 h. q. 6 h.	6 3	27	9	9	99.6	2	Morbilliform	..	1st	..	
4	7 ♂	Tonsillitis; beta hemolytic streptococci; cervical adenitis	0.9 0.6	q. 6 h. q. 6 h.	6 4	28.8	10	10	101.2	2	Morbilliform	..	1st	..	
5	70 ♂	Erysipelas; mastoiditis	1.2 0.6	q. i. d. q. i. d.	2 5	20.7	7	7	104.0	3	Morbilliform, hemorrhagic	..	1st	..	
6	22 ♀	Bronchiectasis; beta hemolytic streptococci	1.2	q. 6 h.	9	37.2	9	8	102.0	3	Morbilliform, urticarial	..	1st	..	
7	65 ♂	Erysipelas; nephrosclerosis	1.2 0.6	q. 6 h. q. 6 h.	4 5	19.2	9	8	103.0	4	Morbilliform	2	...	..	
8	53 ♀	Erysipelas; acute purulent otitis media	1.2 0.6	q. 6 h. q. 6 h.	6 2	28.2	8	9	102.2	3	Morbilliform	1	...	..	
9	5 ♀	Pharyngitis; beta hemolytic streptococci; cervical adenitis	0.6	q. 6 h.	5	9.6	5	10	98.6	2	Morbilliform	5	...	..	Reaction occurred at home
10	24 ♂	Pharyngitis; beta hemolytic streptococci	1.2 0.6	q. 6 h. q. 6 h.	3 7	30	10	10	102.4	3	.....	..	1st	..	
11	49 ♂	Abscess of scalp; beta hemolytic streptococci	1.5 1.2 0.9	q. 6 h. q. 6 h. q. 6 h.	3 4 6	56.4	13	13	104.6	7	.....	..	...	65+	
12	61 ♀	Erysipelas	1.5 0.9 0.6	q. 6 h. q. 6 h. q. 6 h.	2 2 3	26.3	7	7	102.0	3	.....	..	1st	..	Cerebral hemorrhage 8 days after sulfanilamide was discontinued; died
13	15 ♀	Pansinusitis; beta hemolytic streptococci	1.2 0.6	q. 6 h. q. 6 h.	3 4	25.2	7	7	105.8	5	.....	..	2d	..	Toxic psychosis with drug fever
14	31 ♀	Sinusitis; beta hemolytic streptococci; pharyngitis	1.5 0.9 0.6	q. 6 h. q. 6 h. q. 6 h.	3 2 2	26.1	7	7	101.8	3	.....	..	...	2	
15	14 ♂	Adenitis, axillary; beta hemolytic streptococci; diabetes mellitus; terminal ileitis	0.9	q. 6 h.	6	18	6	7	101.8	2	.....	1	...	..	
16	9 ♂	Scarlet fever	0.9	q. 6 h.	4	14.4	4	4	103.0	7	.....	..	7th	..	Drug fever merged with fever of infection
17	13 ♀	Meningitis; beta hemolytic streptococci; mastoiditis	0.9	q. 6 h.	4	12.6	4	4	104.4	9	.....	..	4th	..	Drug fever merged with fever of meningitis
18	34 ♀	Meningococcus meningitis	2.8† 0.3‡ 1.2	q. d. b. i. d. q. 6 h.	1 2 7	33.4	8	8	105.4	4	.....	..	1st	..	
19	38 ♂	Meningococcus meningitis	2.8† 0.2‡‡ 0.2‡ 0.9	q. d. t. i. d. q. d. q. 6 h.	1 1 3 6	24.9	7	7	103	4	.....	..	3d	..	
20	18 ♀	Acute gonorrheal salpingitis	1.2 0.9	q. 6 h. q. 6 h.	3 3	23.1	6	6	105.4	5	.....	..	2d	..	
21	54 ♀	Erysipelas of leg; ? cholecystitis	1.5 0.9	q. 6 h. q. 6 h.	3 4	33	7	7	100	4	.....	..	1st	..	Hepatitis with drug fever

* Discrepancies between "per day" and "total" columns depend on the time of day the dosage of sulfanilamide was begun, changed or discontinued. Sulfanilamide was given orally unless otherwise stated.
† Sulfanilamide was given subcutaneously.
‡ Sulfanilamide was given intrathecally.

was quite abrupt in many instances. Malaise, nausea, itching and tinnitus were the only subjective symptoms noted accompanying drug fever.

A rash accompanied the febrile reaction in nine cases. It was usually a maculopapular erythema, but definite hemorrhagic lesions as well as urticaria-like wheals were noted. The individual lesions varied in size from 0.3 to 4 cm. In the majority of instances the rash involved the face, trunk and extremities, usually being most marked over the buttocks, knees and back, where it tended to become confluent. Itching was present in the majority of instances. The severity of the reaction continued. In two cases fever subsided in spite of continued administration of the drug. It is also of interest that in the majority of the remaining cases the dosage of sulfanilamide had already been reduced when the reaction made its appearance. Hepatitis with jaundice and stupor was present with the febrile response in one instance.

Laboratory data obtained during drug fever was variable. Leukocyte counts varied from 7,000 to 48,000, and the percentage of polymorphonuclear neutrophils varied from 63 to 95. Eosinophils were present in one half of the cases and ranged from 1 to 6 per cent.

Attempts to demonstrate the presence of precipitins for sulfanilamide in the blood serum during and following the reaction have failed, as have attempts to demonstrate sensitivity by patch and intradermal tests. Passive sensitization tests in human beings and guinea-pigs have also yielded negative results. Attempts to produce anaphylaxis and skin hypersensitivity in guinea-pigs have likewise failed.

REPORT OF CASES

To illustrate this specific reaction to sulfanilamide in detail, the following case histories are presented:

CASE 5 (fig. 1).—*Facial erysipelas, acute mastoiditis.* A white man, aged 70, was admitted because of a spreading red lesion of the face of three days' duration. One month previously he had a cold, following which the left ear began to drain. Examination revealed a typical erysipelatous lesion, discharging ear and tenderness over the left mastoid region. Culture of the ear showed beta-hemolytic streptococci. X-ray examination of the mastoid showed acute mastoiditis.

Treatment.—Sulfanilamide 1.2 Gm. by mouth four times a day was given for two days; then 0.6 Gm. by mouth four times a day for five days, a total of 20.7 Gm. of sulfanilamide in seven days.

Result.—Erysipelas and mastoiditis subsided.

Reaction to Drug.—Cyanosis appeared during the first few days of treatment. On the seventh day the temperature rose

Fig. 2 (case 5).—Morbilliform rash with definite hemorrhagic lesions.

sharply and a diffuse morbilliform rash appeared. The rash became hemorrhagic on the eighth day, and pruritus was marked (fig. 2). The only other systemic reaction noted was malaise. Rash and fever subsided in three days.

CASE 6.—*Chronic bronchiectasis.* A white woman, aged 22, was admitted because of a cough of twelve years' duration. Subsequent to measles and whooping cough at 10 years of age, the patient began to raise foul, purulent sputum. Head colds accompanied by postnasal discharge had been frequent. Hemoptysis was noted on one occasion five years before. Examination revealed dulness, increased voice and breath sounds and moist râles at the left base. X-ray examination of the chest after the injection of iodized poppy-seed oil showed bronchiectasis of the left lower lobe. Cultures of the sputum and bronchoscopic drainage revealed a predominance of beta-hemolytic streptococci. As the patient was to have a lobectomy, sulfanilamide was administered in an effort to rid the lung of beta-hemolytic streptococci.

Treatment.—Sulfanilamide 1.2 Gm. by mouth every six hours was given for nine days, a total of 37.2 Gm. in nine days.

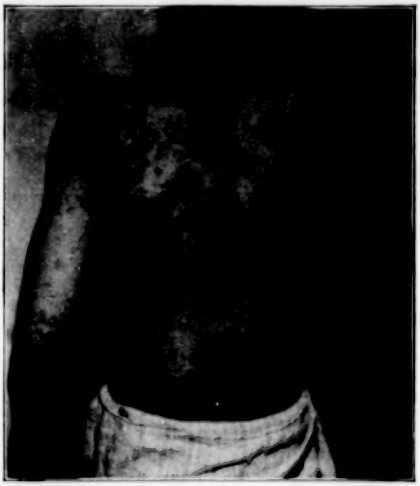

Fig. 3 (case 6).—Drug fever with a rash.

Result.—Beta-hemolytic streptococci disappeared from bronchoscopic cultures on the eighth day of treatment.

Reaction to Drug.—Cyanosis developed during the first two days of drug administration. On the eighth day of treatment, fever followed by a generalized rash appeared, morbilliform to urticarial in type (figs. 3 and 4). In addition, pruritus, anorexia and slight nausea were noted. Rash and symptoms subsided in three days.

CASE 13 (fig. 5).—*Acute streptococcic pansinusitis.* A white girl, aged 15, was admitted because of swelling of the left eye and a nasal discharge. Three weeks before, the patient had had a "cold" and five days before developed frontal headache and profuse nasal discharge. Swelling of the left eye developed two days before admission. Examination revealed tenderness over the left frontal sinus. The left eye was swollen, especially at the inner canthus. There was a profuse purulent discharge from both nares. Culture of the nose showed predominance of beta-hemolytic streptococci. X-ray examination showed pansinusitis.

Treatment Prior to Reaction.—Nasal suction was applied daily. Sulfanilamide 1.2 Gm. by mouth every six hours was given for three days, then 0.6 Gm. by mouth every six hours for four days, a total of 25.2 Gm. in seven days.

Result.—Sinusitis and swelling of the eye subsided completely.

Reaction to Drug.—Cyanosis promptly appeared after sulfanilamide was started. After a slight rise in temperature on the sixth day of treatment, the temperature suddenly rose to 105.5 F. on the seventh day. No rash appeared. At first the fever was thought to represent a spread of infection, perhaps cavernous sinus thrombosis, brain abscess or meningitis, and sulfanilamide was increased to 1.2 Gm. every six hours for one day. Blood cultures were repeatedly negative. Culture of the nose at the time was negative for beta-hemolytic streptococci.

High fever persisted and no localizing signs developed. A definite toxic psychosis accompanied the high fever. Sulfanilamide was discontinued on the third day of the reaction and the fever subsided gradually during the next two days. Recovery was uneventful.

CASE 17.—*Streptococcic meningitis and mastoiditis.* A white girl, aged 13 years, entered the hospital because of an acute exacerbation of a chronic otitis media. Seven days before admission she had had a cold and five days later severe pain developed in the left ear. Chills, fever, nausea, vomiting, headache and stiff neck developed on the day of admission. Examination revealed stiff neck and bilateral Kernig signs. Marked nystagmus was present on looking to the right. The left ear drum was perforated and a discharge was noted in the canal. There was no mastoid tenderness. A culture of the discharge from the ear showed beta-hemolytic streptococci. The spinal fluid was cloudy and contained 850 cells (97 per cent polymorphonuclears). Smear and culture of the spinal fluid were negative for organisms. Mastoidectomy was done at once and culture of the mastoid cells contained beta-hemolytic streptococci. On the second postoperative day the temperature rose sharply. The spinal fluid contained beta-hemolytic streptococci on the third postoperative day.

Treatment Prior to Reaction.—Sulfanilamide 0.9 Gm. by mouth every six hours (starting on the second postoperative day) was given for four days, a total of 12.6 Gm. in four days.

Result.—Mastoiditis and meningitis subsided.

Reaction to Drug.—Cyanosis appeared promptly after the drug was started. On the fourth day of treatment the fever began to rise; i. e., before the fever of the disease had subsided.

Fig. 4 (case 6).—Morbilliform rash with urticaria-like wheals.

Thinking that this represented a spread of the infection, we increased the dosage of sulfanilamide on the sixth day of treatment to 1.2 Gm. every six hours. However, at this time meningeal signs had decreased and blood and spinal fluid cultures proved to be sterile. Nausea and malaise were the only subjective complaints during the reaction. Fever subsided after the drug was discontinued on the seventh day of treatment. Recovery thereafter was rapid and complete.

CASE 20.—*Acute gonococcic salpingitis.* A white woman, aged 18 years, was admitted complaining of pain in both lower quadrants, dysuria and a vaginal discharge of two days' duration. The husband was known to have gonorrheal urethritis. Examination revealed tenderness in both lower quadrants, a profuse vaginal discharge, tenderness in both fornices, and a questionable mass in the right adnexal region. Smears from the urethra and cervix showed numerous gram-negative intracellular diplococci.

Treatment Prior to Reaction.—For three days 1.2 Gm. of sulfanilamide by mouth every six hours was given; then for three days, 0.9 Gm. every six hours, a total of 23.1 Gm. in six days.

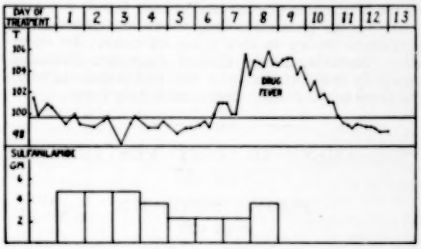

Fig. 5 (case 13).—Pansinusitis with drug fever.

Result.—The discharge ceased, pelvic examination became negative and a smear from the cervix showed "occasional gram-negative cocci" at the time of the discharge of the patient from the hospital.

Reaction to Drug.—Low grade fever and cyanosis were present during the second and sixth days of treatment. On the sixth day the temperature rose to 101.8 F. and on the seventh day it reached 104.8 F. The drug was discontinued at this point and the temperature fell during the next two days. Malaise and tinnitus were quite marked during the febrile period. Recovery was uneventful.

CASE 21.—*Erysipelas of leg. ? Cholecystitis.* A white woman, aged 53, was admitted with a story of chills, fever and a spreading red lesion on the left leg of five days' duration. Intermittent pain in the right upper quadrant had been present for years. The alcoholic intake had been excessive for the past four or five years. The patient was obese and there were varicosities and a typical erysipelatous lesion of the leg. Some tenderness was noted in the right upper quadrant. Nonprotein nitrogen was 43 mg. per hundred cubic centimeters.

Treatment.—Sulfanilamide 1.5 Gm. by mouth every six hours was given for three days, then 0.9 Gm. every six hours for four days, a total of 33 Gm. in seven days.

Result.—The erysipelas cleared fairly promptly.

Reaction to Drug.—Cyanosis was rather extreme; spectroscopic examination of the blood revealed evidence of methemoglobinemia, which by oxygen capacity studies was found to represent 16 per cent of the total hemoglobin. On the seventh day of treatment there was a sharp rise in temperature associated with jaundice and enlarged tender liver but no rash. The icteric index was found to be 40 and the nonprotein nitrogen had risen to 63. The bromsulphalein test revealed 40 per cent retention of the dye at thirty minutes. After the drug was discontinued the fever subsided over a period of three days. The jaundice gradually subsided. Eleven days after sulfanilamide had been discontinued the liver function had improved somewhat, there being a retention of 30 per cent of the bromsulphalein at thirty minutes. The icteric index was 30 and nonprotein nitrogen 29 at this time. The patient left the hospital against advice but seemed to be making an uneventful recovery at the time.

COMMENT

The reactions to sulfanilamide observed in this group of twenty-one cases seem to have definite characteristics that fall quite naturally into a single group. The similarity between drug fever and serum sickness is

rather striking. The time interval, the fever and the rash are characteristics common to the two. Generalized adenopathy and arthritis have not been observed in this series. The fact that the reaction occurs after the drug has been decreased in dosage or even discontinued suggests that it is not the immediate concentration of sulfanilamide in the body at the time of the reaction which is responsible for drug fever but rather that sulfanilamide itself or in a combined or changed form is antigenic. Thus far attempts to throw light on the mechanism of the reaction have failed.

As far as is known, drug fever has produced no permanent injury in this group of cases. Its occurrence, however, creates distinct diagnostic difficulties, especially in the absence of a rash and in cases in which the fever of the disease merges with drug fever.

TREATMENT OF LEFT VENTRICULAR FAILURE

FRED M. SMITH, M.D.
IOWA CITY

That failure of the left ventricle may occur before failure of the right ventricle, resulting in pulmonary congestion with perhaps little or no engorgement of the peripheral veins, explains the basic factors in the production of paroxysmal dyspnea commonly referred to as cardiac asthma. The conception of left ventricular failure is not new, for, as pointed out by White,[1] Weiss and Robb [2] and Harrison,[3] it was clearly described by Hope in 1833. Unfortunately, however, it has been overlooked or disregarded for the most part by the recent generations of our profession until the past few years.

In the cardiac disability resulting from hypertension, arteriosclerosis of the coronary arteries, syphilitic aortitis and disease of the aortic valve, the dominant effect is on the left ventricle. This may finally terminate in insufficiency of the left ventricle before there is corresponding reduction in the functional capacity of the right ventricle, resulting in pulmonary congestion and thus a reduction in the vital capacity. Shortness of breath on exertion is often the first symptom and may be the only subjective manifestation for months. In some instances angina pectoris is the first expression of the cardiac disability and in others there is a history of severe and lasting anginal pain indicative of coronary thrombosis. Later, with further suppression of the function of the left ventricle without corresponding effect on the right ventricle and with the resulting increase in pulmonary congestion and the consequent reduction in the vital capacity, paroxysmal dyspnea may occur. Occasionally the occurrence of paroxysmal dyspnea is the first intimation of cardiac disease and under these circumstances is usually the immediate result of coronary thrombosis. Ordinarily, however, the conditions predisposing to paroxysmal dyspnea develop gradually. The attacks are precipitated by factors that increase the demands on the heart. They may appear during the day following exertion or excitement, but later, in the course of the cardiac disability, they usually occur at night, awakening the subject from sleep.

Harrison and his co-workers,[4] in the study of this subject, point out that various factors such as cough, abdominal distention, nightmares or dreams, and the desire to urinate, may precipitate nocturnal attacks and state that coughing, incident to the pulmonary congestion, and perhaps the associated bronchitis, is the most common and effective exciting agent. They have demonstrated that coughing produces a marked increase in the respiratory rate and conclude that this accelerates the return of the venous blood to the right side of the heart, which in turn aggravates the pulmonary congestion and thereby promotes the possibilities for continuation of the coughing. Thus a vicious cycle is perhaps instituted, which, unless interrupted, may progress to pulmonary edema and terminate in death. Of the various other factors that may contribute to the onset and progression of the paroxysmal dyspnea, apprehension deserves particular emphasis. After a few attacks, especially of the severe form, apprehension plays a significant rôle in precipitating subsequent attacks and no doubt is an important factor in producing the elevation of blood pressure. It is well to bear in mind that an abrupt increase in the already existing pulmonary congestion is primarily responsible for the paroxysmal dyspnea, regardless of the nature of the exciting agent.

Structural alterations of the heart are usually apparent from the increase in the size, particularly involving the left ventricle, the presence of gallop rhythm and possibly systolic apical murmur. Occasionally the gallop rhythm is the most conspicuous manifestation. There is often the history or presence of hypertension and it is frequently possible to demonstrate pulsus alternans. The intensity of the pulmonic second sound is commonly accentuated, more especially during attacks of paroxysmal dyspnea, because of the increased tension of the pulmonary circulation. The electrocardiogram often shows significant alteration of the character observed in disease of the coronary arteries. Pulmonary congestion is a prominent feature, generally evident from physical examination but more apparent from a roentgenogram. The reduction in the vital capacity reflects the extent of the pulmonary congestion and serves as a valuable guide in following the results from treatment.

During attacks of paroxysmal dyspnea the labored breathing, the apprehension and the pulmonary congestion, with perhaps edema, as evidenced by moist, sibilant and musical râles, dominate the picture. The cardiac rate is invariably accelerated and the blood pressure generally elevated above the usual level. Other changes, such as the gallop rhythm and the accentuation of the pulmonic second sound, are commonly prominent. In the more severe attacks the cyanosis, perhaps more often the ashen gray color, the profuse cold perspiration and pulmonary edema are conspicuous features.

In the consideration of the treatment it is important to bear in mind the following aspects of the condition:

1. An inadequate coronary circulation is commonly a prominent factor in the production of the cardiac disability.
2. Insufficiency of the left ventricle results in pulmonary congestion.

Read before the Section on Practice of Medicine at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1937.

1. White, P. D.: Weakness and Failure of the Left Ventricle Without Failure of the Right Ventricle: Clinical Recognition, J. A. M. A. **100**: 1993 (June 24) 1933.
2. Weiss, Soma, and Robb, G. P.: Cardiac Asthma (Paroxysmal Cardiac Dyspnea) and the Syndrome of Left Ventricular Failure, J. A. M. A. **100**: 1841 (June 10) 1933.
3. Harrison, T. R.: Failure of the Circulation, Baltimore, Williams & Wilkins Company, 1935, p. 6.
4. Harrison, T. R.; Calhoun, J. A., and Harrison, W. G.: Congestive Heart Failure: XXI. Observations Concerning the Mechanism of Cardiac Asthma, Arch. Int. Med. **53**: 911 (June) 1934.

3. With the progression of the cardiac disability and the maintenance of a disproportion between the efficiency of the left and right ventricles, a stage is finally reached which permits the occurrence of paroxysmal dyspnea.

4. The attacks are precipitated by factors that impose excess demands on the left ventricle. The onset in the more severe form often intensifies the exciting agent and initiates other factors, which promote the pulmonary congestion, and thus a vicious cycle may be produced.

TREATMENT OF PAROXYSMAL DYSPNEA

The nocturnal attacks are usually aborted by the patient's assuming the upright position. The more severe form, however, is a major cardiac emergency and demands prompt and energetic treatment. Morphine sulfate 15 mg. (one-fourth grain) is the most effective remedy and should be administered immediately and repeated if necessary. The effectiveness of this drug is due, no doubt, to the wide range of action involving both the function of the left ventricle and the pulmonary congestion. In the first place it curtails the demands on the left ventricle by eliminating anxiety and restlessness and the effect of these on the blood pressure. Moreover, morphine depresses the respiratory center, suppresses coughing and by these, and perhaps other means, reduces the tendency toward the progression of the pulmonary congestion.

The intravenous administration of theophylline with ethylenediamine 0.48 Gm. in from 50 to 100 cc. of 50 per cent dextrose solution is also very effective in preventing and abolishing attacks. This should be administered slowly. Improvement is usually apparent shortly after the injection is instituted, as evidenced by the influence on respiration and the relaxing effect on the patient. The results are attributed to the favorable action on the coronary circulation and the resulting increased efficiency of the left ventricle. Recently Greene, Paul and Feller [5] of the University of Iowa have demonstrated that theophylline with ethylenediamine produces a marked reduction in the venous and intrathecal pressure. They have also verified the observation that it will frequently eliminate the bronchial obstruction of bronchial asthma and that it has similar action in paroxysmal dyspnea. The hypertonic dextrose solution is believed to enhance the effect of theophylline with ethylenediamine on both the heart and the pulmonary congestion.

In my practice, digitalis in the form of digifoline from 2 to 6 cc. is often added to the theophylline with ethylenediamine and dextrose solution in order to produce the maximum effect on the left ventricle. The intramuscular or intravenous administration of ouabain 0.5 mg. ($\frac{1}{125}$ grain) or amorphous strophanthin 1 mg. ($\frac{1}{65}$ grain) is often recommended because of the prompt and powerful action. These drugs are dangerous if given in larger doses or if digitalis has been used.

Venesection is a valuable measure, particularly in the plethoric type of individual. The rapid withdrawal of 500 cc. of blood from the veins of the arm at once reduces the venous return to the right side of the heart and thereby decreases the pulmonary congestion. It also diminishes the load on the left ventricle through the reduction in the blood pressure and the viscosity of the blood.

Similar effects with regard to the pulmonary congestion may be obtained by the procedure referred to as venestasis, recommended by Danzer,[6] Weiss and Robb [2] and Harrison.[3] The principle of the procedure is based on the reduction of the venous return to the right side of the heart through trapping the blood in the four extremities. This may be accomplished by the application of the cuff of a clinical sphygmomanometer as high up as possible on each of the extremities and the inflation of these to the pressure of from 60 to 80 mm. of mercury. With the subsidence of the attack the pressure may be gradually released from one extremity at a time.

If the attack continues after one or more of these measures have been employed, the administration of oxygen should be instituted by nasal catheter if a tent or oxygen chamber is not available. In fact, one should never rely on one remedy but combine as many as the circumstances justify.

Other drugs, such as glyceryl trinitrate, atropine and epinephrine, have been recommended in the treatment of paroxysmal dyspnea. With excessive elevation of blood pressure the use of glyceryl trinitrate is indicated because of its effect on arterial tension and action on the coronary circulation. It is doubtful, however, that atropine has any significant value, and the administration of epinephrine is not advisable in disease of the coronary arteries.

The subsequent treatment consists of:

1. Bed rest for from four to six weeks with complete relaxation and adequate sleep.
2. Simple diet with plenty of carbohydrates.
3. Regulation of the bowels by simple measures such as the administration of liquid petrolatum.
4. The administration of theophylline with ethylenediamine from 0.1 to 0.2 Gm. (1½ to 3 grains) from three to four times a day, digitalis (powdered leaf) 0.1 Gm. (1½ grains) three times a day for from five to six days and thereafter once a day, and the use of a mercurial diuretic if necessary to eliminate the pulmonary congestion.
5. Later the elimination or the control as far as possible of factors promoting the cardiac disability and finally the careful extension of the physical activities.

Time does not permit the discussion of each of these aspects of the treatment. Certain of them, however, deserve mention. The first concerns the prevention of the return of the nocturnal paroxysmal dyspnea. Adequate sleep is essential to the restoration of the cardiac function and is best obtained by the use of morphine. This medication is seldom required for more than a few nights. Thereafter simple sedatives, particularly when supplemented by theophylline with ethylenediamine, will produce the desired sleep and prevent the recurrence of paroxysmal dyspnea. The theophylline with ethylenediamine is more effective when given intravenously shortly before bedtime and, in my practice, is usually administered in 50 per cent dextrose solution. This method of use is reserved for the more advanced forms of cardiac disability and is ordinarily discontinued after a few days. The oral administration of theophylline with ethylenediamine is generally employed and continued indefinitely. The results from the prolonged use of the theobromine and theophylline preparation have been reported by Gilbert and Kerr [7] and by me in collaboration with Rathe and Paul.[8] Digitalis is necessary with auricular fibrillation

5. Greene, J. A.; Paul, W. D., and Feller, A. E.: The Action of Theophylline Ethylenediamine on Venous and Intrathecal Pressures and on Bronchial Obstruction, to be published.

6. Danzer, C. S.: Pathogenesis and Treatment of Dyspnea in Light of Recent Experiments, Ann. Int. Med. **2**: 239 (Sept.) 1928.

7. Gilbert, N. C., and Kerr, J. A.: Clinical Results in the Treatment of Angina Pectoris with Purine Base Diuretics, J. A. M. A. **92**: 201 (June 19) 1929.

8. Smith, F. M.; Rathe, H. W., and Paul, W. D.: Theophylline in the Treatment of Disease of the Coronary Arteries, Arch. Int. Med. **56**: 1250 (Dec.) 1935.

and the intermittent use in small 0.1 Gm. (1½ grain) doses daily is believed to be advisable with normal cardiac mechanism.

Finally the duration of rest and the subsequent extension of the physical activities deserve particular emphasis. The restoration of the heart to the maximum efficiency is obviously the primary objective. In view of the extent of the disability of the left ventricle this is not possible except by a long period of rest followed by the rehabilitation of the heart through the gradual and careful supervised extension of the physical activities. This aspect of the treatment is frequently slighted and no doubt is commonly responsible for the early return of symptoms. The patient should not be permitted to be up and about until long after the pulmonary congestion has disappeared. The subject, however, may have been free from nocturnal paroxysmal dyspnea for weeks and still have extensive pulmonary congestion. The determination of the vital capacity at weekly intervals provides a valuable means of following this feature of the recovery. If there is any question concerning the condition of the lungs, however, a roentgenogram should be taken. In the more advanced cases the use of salyrgan, perhaps preceded by the administration of ammonium chloride, may be necessary to eliminate the pulmonary congestion. The following case is cited because of the rather typical course and the difficulty encountered in controlling the pulmonary congestion:

G. F., aged 71, was first examined by me in December 1934. He had noticed shortness of breath for from three to four years and experienced the first attack of paroxysmal dyspnea in October 1933. In the spring of 1934, while returning from Florida, he was compelled to restrict his activities on two occasions because of asthmatic-like attacks. He had been awakened from sleep because of dyspnea for three or four nights prior to the examination. He weighed 200 pounds (91 Kg.), whereas the weight had formerly been 220 pounds (100 Kg.) for several years. The heart was quite large, the tones were poorly differentiated and there was an occasional premature beat. The systolic pressure was 190 and the diastolic 120 mm. of mercury. Scattered râles were heard over the bases of the lungs. The electrocardiogram showed slurring of the QRS complexes, left axis deviation and negative T deflection in lead 1. He was advised to take more rest and to avoid shortness of breath, and was prescribed theophylline with ethylenediamine 0.2 Gm. (3 grains) three times a day and digitalis (powdered leaf) 0.1 Gm. (1½ grains) once daily. The subsequent course was quite satisfactory until the appearance of the hot weather in July 1936, when the nocturnal dyspnea returned. In September, while away from home, he had very severe attacks. His wife mentioned in particular the ashen gray color and the profuse cold perspiration. With a period of rest he again improved, but following an upper respiratory infection in December 1936 he began to have frequent attacks of nocturnal dyspnea.

When admitted to the University Hospital in February 1937 he was very much worn out from the loss of sleep and weighed 180 pounds (82 Kg.). Slight exertion produced dyspnea, yet there was no significant distention of the jugular veins. The cardiac rate was moderately accelerated. There was a pronounced gallop rhythm, pulsus alternans and extensive congestion of the lungs. The systolic pressure was 170 and the diastolic 90 mm. of mercury. The vital capacity was 1.5 liters. The treatment was as previously outlined. After five weeks of bed rest with sound sleep during the night and freedom from respiratory distress there was still extensive congestion of the lungs. This was eliminated by the use of salyrgan and ammonium chloride. Despite the continuation of the bed rest the pulmonary congestion returned in three or four weeks and was again eliminated by the mercurial diuretic administration in the form of suppositories. This patient is now up in a chair for a few hours each day, states that he feels fine, and presents a vastly improved general appearance; but it is obviously unwise to permit extension of his activities until the pulmonary congestion is controlled.

SUMMARY

Left ventricular failure characterized by the occurrence of paroxysmal dyspnea is a common form of cardiac disability. The treatment is concerned with the control of the paroxysmal dyspnea and the subsequent restoration of the cardiac function to the maximum efficiency. Ordinarily the attacks are readily abolished by the measures generally employed in the treatment of cardiac failure. The more severe form, however, is a major cardiac emergency and demands prompt and energetic treatment.

ABSTRACT OF DISCUSSION

DR. N. C. GILBERT, Chicago: Dr. Smith's paper concerns the treatment of an emergency frequently encountered and is of immediate and practical value. I would like to emphasize a point or two in which I am especially interested. The most important point which Dr. Smith brought out is the use of theophylline ethylenediamine in the treatment of the acute attack. I do not think that the fullest possible use is made of this and related preparations or that their value is fully appreciated. In many types of animal experiments, theobromine and theophylline have been shown to increase the coronary flow, and this has been substantiated by the clinical experiences of many observers over a long period. Dr. Smith has said that an inadequate coronary circulation is an important factor in the production of the cardiac disability, which is the basis of these attacks, and that the attacks themselves are precipitated by factors which impose an excess load on the heart. It would seem logical, then, to do as Dr. Smith has done and make use of a therapeutic agent to increase the coronary flow to the heart and to the left ventricle, and to combine this with the hypertonic dextrose solution to add further in overcoming the pulmonary edema which is part of the picture. I wonder how much of the cardiac disability following hypertension or resulting from coronary sclerosis, syphilis or old rheumatic carditis could be delayed or mitigated, if not prevented, by the early and continuous use of theobromine or theophylline preparations by mouth over a long period. I am sure that Dr. Smith will agree with me that they would be of definite value. Dr. Smith has shown the effect of theophylline in increasing the blood flow to the area of heart muscle deprived of its normal blood supply. Dr. Fenn and I believe, from our clinical experience, that we have reason to assume a permanent improvement in the blood supply to the heart muscle induced by the long coronary dilatation and a consequent increase in anastomoses. Dr. Smith has spoken of the continuous use of theophylline by mouth in patients with left ventricular failure and paroxysmal dyspnea. This is of special value for the double purpose of improving coronary flow and of helping to eliminate any residual edema. It is of great importance that the lungs be edema free. We have reason to think that the presence of the edema predisposes to the acute attack. If edema does persist, we should make use of one of the acid base salts and a mercurial diuretic, as has been stated by the essayist. Digitalis may or may not be of value, and it should be used in chosen cases with judgment and discrimination, and not in a routine manner. The use of glyceryl trinitrate in cases associated with hypertension I consider of great value, both for its effect on the coronary flow and for its effect on decreasing blood pressure. Morphine is, of course, almost a necessity. Between the attacks I consider the milder barbiturates of great value in quieting the apprehension which is undoubtedly a large factor in the attack. I also think venesection is overlooked and not used as much as it should be.

DR. R. D. BOOK, Corning, Ohio: I should like to ask a question. Morphine is emphasized, but I find patients who can't take morphine. How about codeine? That is what I have been using. It seems to work all right. Is there any objection to it?

DR. FRED M. SMITH, Iowa City: It is true that occasionally a patient is intolerant to morphine. Under such circumstances, I usually use some other preparation. Codeine may serve the purpose.

LOBELINE SULFATE

ITS PHARMACOLOGY AND USE IN THE TREATMENT OF THE TOBACCO HABIT

IRVING S. WRIGHT, M.D.
AND
DAVID LITTAUER, M.D.
NEW YORK

It is now generally accepted that the use of tobacco is definitely contraindicated in many conditions in which the circulation is impaired.[1] It often becomes necessary, therefore, for physicians to insist that patients suffering from such impairment stop the use of tobacco completely in any form and for the rest of their lives. We have advised termination of the tobacco habit in more than 100 cases during the past two years. If the physician is emphatic enough, pointing out clearly the dangers of continuing, the task can be accomplished in many instances without the strain anticipated by the patient. A certain percentage always remain, however, to whom sudden or even gradual deprivation of tobacco is a hardship. For this group substitutions such as gum chewing have been recommended from time to time but have been found generally unsatisfactory.

Recently Dorsey [2] presented an encouraging report on the use of lobeline sulfate as an aid to the breaking of the tobacco habit. The drug was recommended to be given orally in capsules, each containing 0.008 Gm. (one-eighth grain), one capsule being taken every time a desire for a smoke was experienced. After a period of a few days, according to Dorsey's report, the desire for tobacco disappeared and the lobeline sulfate was gradually discontinued, leaving the patient with increased appetite and sense of well being and without the craving for "a smoke." A few unpleasant side actions such as nausea, anorexia and metallic taste were noted, but it was stated that these were only temporary and outweighed by the benefits.

Because a drug which would enable the confirmed smoker to give up this habit without hardship would be of obvious importance, and because lobeline resembles nicotine so closely in many of its pharmacologic properties, we undertook to determine whether or not it possessed any of those very actions which interdict nicotine for patients suffering from disease of the peripheral circulation and whether it could safely be widely used to help "cure" the tobacco habit.

PHARMACOLOGY

Lobeline [3] is the principal alkaloid of Lobelia inflata, popularly known as Indian tobacco because it was believed to have been used by the aborigines in place of tobacco, although the Lloyds [4] question seriously whether the Indians ever made use of the plant in the manner of a tobacco. Other alkaloids of the Lobelia plant include lobelanine, lobelanidine and lobelidine, with similar but weaker properties. The principal effects of the drug are considered as due to its action on the respiratory and vomiting functions and on the autonomic ganglions.

Edmunds [5] believes emesis to be the main action of the drug in warm blooded animals, holding most symptoms secondary to the vomiting, which is medullary in origin. Lobelia was, in fact, the most important member of the class of "emetics" used by Sir Samuel Thomson and his followers in the early nineteenth century.[4]

In small doses lobeline has been held to be a powerful respiratory stimulant, lowering the threshold to carbon dioxide. In experimental animals large doses of it or its salt produce muscular twitchings, convulsions and even death from paralysis of the respiratory center.[6] Because of its effect on the respiration the drug has been widely recommended in cases of narcotic poisoning, coal gas asphyxia and infectious diseases such as pneumonia,[7] in respiratory failure during both general and spinal anesthesia [8] and in asphyxia neonatorum.[9] A considerable body of evidence has accumulated, however, discouraging the use of lobeline salts in respiratory failure. Curtis and Wright [10] have found that the doses necessary to produce breathing have widespread effects on other systems, such as the heart, which may be dangerous. Others [11] have demonstrated that the drug is most effective when respiratory depression is slight or does not exist at all, while in profound depression the respiratory stimulus is often negligible. Camp,[12] after experimental studies on dogs, concluded that the drug was not a specific stimulant of the respiratory center and that all the other effects which it produces are due to the nicotine-like action on the autonomic ganglions. Following the work of Norris and Weiss,[13] carbon dioxide has been widely used in place of lobeline to combat anesthesia asphyxia.

The direct and indirect effects on the general circulation have been carefully studied by several groups of observers.[14] Lobeline causes sinus arrhythmia, partial bundle branch block and ventricular extrasystoles. After an initial pressor effect with rapid rise in the blood pressure there is a prolonged and dangerous fall below original levels, due probably to paralysis of the ganglions along the course of the vasomotor fibers and to direct poisonous action on the heart muscle. The drop in blood pressure is especially pronounced in deeply anesthetized animals.

From the Vascular Clinic of the Department of Medicine, New York Post-Graduate Medical School and Hospital, Columbia University.

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2. Dorsey, J. L.: Control of the Tobacco Habit, Ann. Int. Med. **10**: 628 (Nov.) 1936.

3. Lobeline when not qualified by "hydrochloride" or "sulfate" is used in the broad sense like "morphine."

4. Lloyd, J. U., and Lloyd, C. G.: Drugs and Medicine of North America **2**: 63, 1886.

5. Edmunds, C. W.: On the Action of Lobelin, Am. J. Physiol. **11**: 79, 1904.

6. Wieland, Hermann, and Mayer, Rudolf: Pharmakologische Untersuchungen am Atemzentrum: II. Arch. f. exper. Path. u. Pharmakol. **92**: 195, 1922. Edmunds.[5]

7. Wieland, H.; Eckstein, A., and Rominger, E.: Pharmakologische und klinische Beobachtungen über die Wirkung des krystallierten Lobelins auf das Atemzentrum, Ztschr. f. Kinderh. **28**: 218 (March) 1921.

8. Hellwig, A.: Lobelin bei Atemlähmung in der Narkose, Zentralbl. f. Chir. **48**: 731 (May 28) 1921.

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12. Camp, W. J. R.: Alpha-Lobelin: A Pharmacological Study, J. Pharmacol. & Exper. Therap. **31**: 393 (Sept.) 1927.

13. Norris, V. H., and Weiss, Soma: Pharmacological and Therapeutic Properties of Alpha-Lobelin; Comparison of Its Action on the Respiratory Center with that of Other Respiratory Stimulants, J. Pharmacol. & Exper. Therap. **31**: 43 (May) 1927.

14. Hochrein, M., and Meier, R.: Ueber die Kreislaufwirkung das Lobeline, Arch. f. exper. Path. u. Pharmakol. **140**: 288, 1929. Whitehead, R. W., and Elliott, D. C.: Electrocardiographic Studies of the Action of Alpha-Lobelin and Epinephrine on the Mammalian Heart, J. Pharmacol. & Exper. Therap. **31**: 145 (June) 1927. Wieland, Eckstein and Rominger.[7] King, Hosmer and Dreshach.[11]

Lobeline was available in amorphous form only until Hermann Wieland[15] in 1915 extracted a fairly pure crystalline compound, and Heinrich Wieland[16] later determined the formula of the pure alkaloid. Two commercial preparations sold in this country as lobeline sulfate are lobeline sulfate-Merck, which, according to our information, is a mixture of the sulfates of alpha, beta and gamma lobeline, in unknown proportions, and lobeline sulfate-Mallinckrodt, which, according to our information, is a mixture of the sulfates of the total alkaloids of Lobelia. In other words, it may contain small amounts of alkaloids from Lobelia other than alpha, beta and gamma lobeline.

A crystalline hydrochloride of alpha lobeline has been sold under the trade name of Alpha-Lobelin. The Council on Pharmacy and Chemistry has refused to accept alpha-lobelin for inclusion in New and Nonofficial Remedies.[17] "Lobeline sulfate" is not official in the U. S. Pharmacopeia or National Formulary and is not described in New and Nonofficial Remedies. It was believed that the crystalline hydrochloride, alpha-lobelin, possessed the respiratory stimulating action without the emetic action.[18] However, others[13] believe that the pharmacologic properties of the crystalline hydrochloride in animals and in men are essentially similar to those of the amorphous mixture of alkaloids or extracts of Lobelia inflata and that emesis does occur.

An evaluation of various lobeline preparations has been presented by Nisisita.[19] He states that in rabbits a fresh solution of crystalline lobeline had the greatest toxicity and the strongest effect on the respiration. Lobelanine in relatively small doses produced convulsions. The emetic action was strongest with lobeline sulfate; it was felt that a decomposition product might accentuate or even produce this effect.

In recent years it has been found that injection of lobeline salts may be followed by a rise in the blood sugar.[20] The same effect may follow injection or even inhalation of nicotine[21] and has been advanced as part of the explanation of loss of appetite and sense of satisfaction from smoking. This has been explained as secondary to its action on the adrenal medulla, which increases the rate of secretion of epinephrine,[22] with resultant conversion of glycogen into dextrose.

METHODS OF INVESTIGATION

Lobeline was used in the form of sulfate, prepared in capsules of 0.008 Gm. (one-eighth grain), as recommended by Dorsey, with an inert base of magnesium oxide or starch. The preparations of Merck and Mallinckrodt were used in about an equal number of tests. The results obtained with these preparations were similar in different persons and at different times in the same person.

The subjects were divided into two groups, the first receiving the drug on varying schedules of dosage and noting symptoms therefrom, and the second receiving one or two doses during a test period while skin temperatures, blood sugars and capillaries of the skin were recorded or observed. Whenever possible, similar observations were made on the subjects of the second group following smoking of standard brand cigarets. Control subjects were used in both groups.

Observations on Subjects Taking Lobeline Sulfate on Varying Schedules of Dosage.—This group consisted of five subjects who did not smoke and twenty-eight who were confirmed smokers of cigarets, pipes, cigars or combinations of the three. The subgroup of nonsmokers contained three healthy normal adults and two sufferers from heart disease or peripheral vascular disease. The subgroup of smokers contained four normal persons and twenty-four victims of circulatory disease. In addition, four subjects representing healthy and diseased, smoker and nonsmoker, were used as controls. In the entire group there were twenty-eight men and five women.

Each subject was given a supply of capsules and put on a varying schedule of dosage. The smokers, whether normal persons or victims of cardiovascular disease, were instructed to take one capsule of the drug with a small amount of water whenever the urge to light a cigaret, cigar or pipe was experienced and to record symptoms if any developed. A limit of eighteen capsules in any one day was set for them, in accordance with Dorsey's observations that more than that number was never necessary. The nonsmokers were instructed to take one capsule of the lobeline sulfate three or four times daily and to record symptoms.

The four controls were given capsules containing only magnesium oxide.

The analysis of the observations in this experiment is considerably simplified because we noted no significant difference in the reactions of the so-called normal subjects and those suffering from circulatory disease, none between the two sexes and none between smokers and nonsmokers, except in the change in the desire for tobacco in members of the former group. In the group of those who smoked and who had been instructed to take a capsule of lobeline sulfate every time the urge for tobacco was experienced, a definite loss of this urge was experienced in almost every case after ingestion of even one capsule. The desire would return in a less acute form from half an hour to several hours thereafter and could again be easily satisfied, usually for several hours, by ingestion of a second capsule. Except for this observation on the loss of desire for tobacco, the results were uniform for the entire group, varying only in degree from subject to subject.

The symptoms produced by the oral use of this drug were predominantly gastro-intestinal. After one capsule they ranged from a few gaseous eructations, coming on within fifteen minutes after ingestion and persisting for from one to three hours, to severe "heartburn," boring epigastric pain, faintness, nausea and vomiting, appearing within from ten to twenty minutes after ingestion and lasting for from a few minutes to four hours. Metallic taste and salivation were common. One patient who took two capsules at once in error

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16. Wieland, Heinrich: Ueber die Alkaloids der Lobelin-Pflanze: I. Ber. Deutsch. chem. Gesellsch. **54**: 1184, 1921.

17. Alpha-Lobeline: New and Nonofficial Remedies, J. A. M. A. **89**: 693 (Aug. 27) 1927. Alpha-Lobelin Not Acceptable, Reports of the Council, ibid. **100**: 1933 (June 17) 1933.

18. Wilson, R. A., and Torrey, M. A.: Effects of Alpha-Lobelin on Respiration; Experimental Study, Am. J. Surg. **23**: 426 (March) 1934. Crimi, Giovanni: Coratteri differenziali tra azione dell'estratto totale di lobelia inflata e azione della lobelina pura, Boll. soc. ital. biol. sper. **8**: 122, 1933. Wieland, Eckstein and Rominger.[5]

19. Nisisita, Masami: Studien über das atemerregende mittel Lobelin: I. Beurteilung verschiedener Lobelinpräparate und Vergleich mit Lobelanin und den Gesamtalkaloiden der Lobelia inflata, Okayama-Igakkai Zasshi. **39**: 1985, 1927.

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22. Tournade, A., and Chabrol, M.: Sur l'adrénalino-secretion que déclenche l'injection intraveineuse de nicotine, Compt. rend. Soc. de biol. **94**: 1002 (April 23) 1926.

vomited repeatedly during the following six hours. Other symptoms reported were lethargy, inability to concentrate, and a sensation of fulness in the head. Symptoms were less pronounced when the drug was taken on a full stomach. A characteristic of the reports was that the symptoms referable to the gastro-intestinal system would undergo recrudescence anywhere from fifteen to sixty minutes after they had subsided.

Despite the instructions to those who smoked not to hesitate to take as many capsules, up to eighteen daily, as their desire for tobacco indicated, and to those who did not smoke to take three or four capsules daily, not a single subject would willingly take more than three capsules a day for longer than three days. A number of patients did not wish to take a second capsule following their experience with the first. It is true that among those who smoked the desire for tobacco was lost on this dosage, but it was equally true that in the entire group, whether smokers or not, whether normal or suffering from cardiovascular disease, whether men or women, the appetite for food was also markedly diminished, and other extremely unpleasant side actions were experienced so long as the effects of the drug were pronounced enough to inhibit the desire for smoking.

The following three histories are quoted as typical of the series. A research engineer who took one capsule daily for ten days reported that he lost all desire for "a smoke" but that after the first day he did not eat well, could not concentrate as well as he could with nicotine and felt generally miserable. The junior author (D. L.) of this report, a confirmed smoker of pipes and cigarets, took four capsules on one day and three on the next. There was mild epigastric pain following the first dose, slight discomfort following the second and none thereafter. A few minutes after each dose, definite salivation and a metallic taste in the mouth were observed. On the evening of the first day there was moderate desire for tobacco, easily requited by ingestion of the fourth capsule for that day. On the second day no such desire was in evidence. He ate little lunch on the second day and less dinner. He was unduly lethargic on the evening of the second day. Three days after cessation of the experiment he took one capsule as part of the investigation to be described and ten minutes after ingestion experienced severe boring epigastric pain which persisted for about twenty minutes, subsided gradually, recurred in milder form ten minutes later and lasted for almost an hour there-

TABLE 1.—*The Effects of the Ingestion of 0.008 Gm. of Lobeline Sulfate*

Case	Subject	Sex	Age	Diagnosis	Tobacco Habit, Daily	Maximum Change in Skin Temperature	Maximum Change in Blood Sugar Level	Capillaries	Symptoms
1	F. T.	♂	67	Arteriosclerosis with incipient gangrene	10-20 cigarets daily	No change	— 18 mg. %	No change	Eructations
2	D. L.	♂	30	Normal	4-5 pipes, 2-10 cigarets	No change	+ 5 mg. %	No change	Boring epigastric pain, nausea, belching, salivation; metallic taste, anorexia
3	W. S.	♂	50	Thrombo-angiitis obliterans	2-3 cigarets	— 2° C.	No change	No change	Epigastric pain; belching, dizziness, salivation
4	J. S.	♂	54	Arteriosclerosis	10-20 cigarets	— 4° C.	+ 64 mg. %	No change	Epigastric burning, nausea, eructations
5	E. H.	♂	48	Thrombo-angiitis obliterans	10-30 cigarets	No change	No change	No change	Salivation
6	E. M	♀	29	Normal	Stopped smoking	No change	No change	No change	Metallic taste, eructations
7	I S.	♂	50	Arteriosclerosis; diabetes mellitus; diabetic gangrene	Nonsmoker	— 1° C.	— 22 mg. %	No change	Epigastric discomfort; eructations; anorexia
8	E. Mac.	♀	26	Normal	Nonsmoker	— 4.5 ° C.	.....	No change	Eructations
9	A. K.	♂	53	Thrombo-angiitis obliterans	Stopped smoking	Readings interrupted; initial tendency to fall	+ 55 mg. %	No change	Nausea, salivation; epigastric pains "as if kicked in stomach"
10	W. M.	♂	33	Thrombo-angiitis obliterans	Stopped smoking	No change	No change	No change	Eructations; nausea; "light-headedness"; slight epigastric pain
11	E. S.	♂	27	Thrombo-angiitis obliterans	Stopped smoking	— 2.5° C	No change	No change	Eructations; nausea; mild epigastric cramps; headache
12	A. L.	♂	41	Thrombo-angiitis obliterans	Stopped smoking	Readings interrupted	.....	.....	Severe epigastric pain; nausea

TABLE 2.—*The Effects of the Inhalation of Smoke from One Standard Brand Cigaret*

Case	Subject	Sex	Age	Diagnosis	Tobacco Habit, Daily	Maximum Change in Skin Temperature	Maximum Change in Blood Sugar Level	Capillaries	Symptoms
1	F. T.	♂	67	Arteriosclerosis with incipient gangrene	10-20 cigarets daily	— 2° C.	+ 15 mg. %	Flow slower	Slight nausea
2	D. L.	♂	30	Healthy, normal	4-5 pipes, 2-10 cigarets	— 4° C.	No change	Flow slower	Slight headache
3	W. S.	♂	50	Thrombo-angiitis obliterans	2-3 cigarets	No change	+ 5 mg. %	No change	Dizziness; tingling in toes
4	J. S.	♂	54	Arteriosclerosis	10-20 cigarets	— 4° C.	+ 76 mg. %	No change	Nausea, headache, palpitation
5	E. H.	♂	48	Thrombo-angiitis obliterans	10-30 cigarets	+ 3° C.	+ 8 mg. %	No change	Perspiration, dizziness, pallor

after. A patient who took a daily dose of 0.008 Gm. (one-eighth grain) of lobeline sulfate three times daily for three days reported "an unpleasant, unsettled feeling in the stomach, flat taste in the mouth, and considerable belching."

The control group experienced no symptoms whatever.

Observations on the Temperature of the Skin, the Capillaries and the Level of the Blood Sugar in Patients Given Lobeline Sulfate and Smoking Tobacco Under Test Conditions.—In this group were seven subjects who did not smoke and five who smoked cigarets alone or cigars or pipes in addition, in varying amounts. Of the nonsmokers, two were healthy normal persons and five suffered from peripheral vascular disease. Of the smokers, one was a healthy normal person and four were victims of heart disease or peripheral vascular disease. Two additional subjects were used as controls. In the entire group were ten men and two women. Their ages ranged from 29 to 67.

Each subject was given one capsule of 0.008 Gm. of lobeline sulfate orally, and observations on skin temperatures, capillaries and blood sugars were made, following the methods to be described. The two controls were given capsules containing magnesium oxide. The results are summarized in table 1.

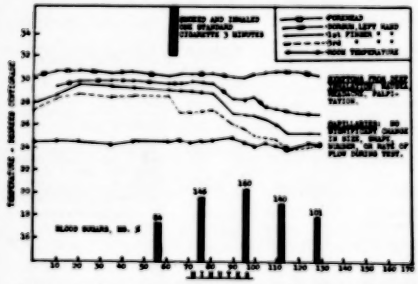

Chart 1.—Skin temperature study March 29, 1937: J. S., a man, aged 54, Jewish, had generalized arteriosclerosis, recent coronary occlusion, and peripheral sclerosis with intermittent claudication. The hands were exposed at room temperature for one-half hour before readings were made. Blood for sugar determinations was taken from the right antecubital vein. Capillary studies were made on the fingers of the right hand. The patient had a breakfast of prunes and coffee three hours before the first blood specimen was taken. He smoked one cigaret two hours before readings were begun.

The observations were repeated, in the case of the five smokers, with inhalation of the smoke of one standard brand cigaret in place of lobeline sulfate (table 2). As both hands of the subject were occupied during the test, the cigaret was held by an observer while the subject took deep breaths and inhaled at a moderate rate. As the effects of tobacco smoking on normal control individuals have already been established by ourselves and by others,[1] we did not include them in this phase of the experiment.

Recording of Skin Temperatures.—The subjects were seated in a draftless room the temperature of which ranged between 22 and 24 C. (71.6 and 75.2 F.). They were adequately clothed. The left hand was placed on a table covered with several thicknesses of paper toweling. Readings were taken by a Leeds and Northrup potentiometer with iron, copper, platinum, chromel and alumel thermocouple junction from the first, third and fifth fingers just proximal to the nail fold, from the dorsum of the hand, and from the midforehead. The subjects sat quietly in the room for at least half an hour or as long as necessary to establish a stabilized temperature level. At first the skin temperatures were recorded every ten minutes; after stabilization had occurred and during the test they were recorded every five minutes.

Observation of the Skin Capillaries.—The nail folds of the fingers of the right hand were cleaned with benzene and alcohol. The nail fold of one finger was observed through the capillary microscope for changes in number, in size and shape of the stream and in rate of flow. Capillaries were observed several times before and at ten minute intervals after the test was begun.

Determination of the Blood Sugar Levels.—The blood was drawn from the antecubital vein of the right arm. Whenever possible a tourniquet was not used, light pressure being applied to the upper arm instead to obviate changes in the capillary picture in the fingers of this extremity, from this procedure. Analysis of blood was by the technic of Folin and Wu.

Specimens were taken a few minutes before lobeline sulfate was ingested or a cigaret was smoked and again twenty, forty and sixty minutes after ingestion or commencement of inhalation. The observations were so timed that the initial blood specimen was drawn at least three hours after a light breakfast, except in case 7 (I. S., a diabetic patient, on whom observations were made on a fasting stomach).

RESULTS IN SUBJECTS RECEIVING LOBELINE SULFATE ORALLY

As in the first part of the study, following the ingestion of lobeline (in the form of its sulfate) the symptoms were predominantly gastro-intestinal and ranged from a few gaseous eructations, which appeared a few minutes after ingestion, to severe boring epigastric pain, which necessitated termination of the portion of the experiment concerned with skin temperature readings in two cases. Other reactions were dizziness and drowsiness. No change in respiration was observed except in the presence of severe pain or nausea.

Of the ten studies in which skin temperature readings were possible, in two the temperature of the nail folds fell at least 2 degrees C. (3.6 degrees F.); in two more it fell at least 4 degrees C. (7.2 degrees F.); in six there was no appreciable change. Depression of temperatures was coincident with the onset of gastro-intestinal symptoms in each case in which it occurred, but the severity of the symptoms had no relation to the extent of the drop.

In two of the ten cases in which blood sugar levels were determined there was a definite rise in the blood sugar of 55 and 64 mg. per hundred cubic centimeters respectively within one-half hour, and then a fall to normal by the end of an hour. In two cases the blood sugar fell 18 and 22 mg. Five cases showed no change; in a sixth case there was a rise of 5 mg. per hundred cubic centimeters, not considered significant. The two patients exhibiting the hyperglycemia also experienced severe gastro-intestinal symptoms; one also showed a drop of skin temperature, and in the other, after an initial slight fall, readings had to be discontinued because the patient jumped up and began to massage his abdomen vigorously with the hand from which temperatures were being taken.

In no subject were significant differences in the number, size and shape of stream or rate of flow of

the capillaries observed before and after ingestion of the drug. In none were there changes in respiration, with the exceptions noted.

RESULTS IN SUBJECTS INHALING SMOKE OF STANDARD CIGARETS

The five smokers in the group receiving lobeline sulfate were the nucleus of this observation.

Symptoms from deep inhalation included nausea, palpitation, slight headache, dizziness, tingling in the toes and, in one case, clammy perspiration.

In three of the five cases the temperature of the nail folds of the fingers fell 2 degrees C. or more, commencing during the period of smoking and remaining at the lower level for at least one hour thereafter. In one case no change was observed. The fifth subject, who broke into a sweat during deep inhalation (he was accustomed to superficial puffs only) exhibited a rise in finger temperature of 3 degrees C. (5.4 degrees F.). The temperature of the dorsum of the hand did not change appreciably in any subject, and, except in the subject who perspired, the forehead temperatures did not change at all.

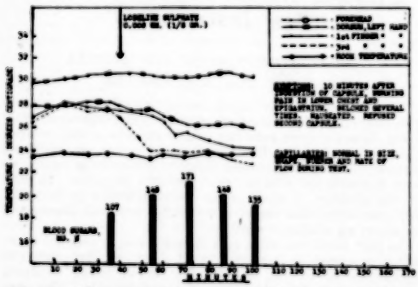

Chart 2.—Skin temperature study April 1, 1937, on same patient as in chart 1. The hands were exposed at room temperature one hour before test readings were made. The blood for the sugar determination was again taken from the right antecubital vein and the capillary studies were made on the fingers of the right hand. The patient had breakfast three hours before the initial blood sugar reading was made. He smoked his last cigaret one hour and a half before the readings were begun.

Blood sugars in two of the five cases showed definite elevations of 15 and 76 mg. per hundred cubic centimeters within one-half hour, and a fall to original levels by the end of one hour; in two cases there were rises of 5 and 8 mg., considered too slight to be significant; in the fifth case the level of blood sugar was unchanged during the period of observation. The rise of 8 mg. occurred in the subject who reacted to smoking with dizziness, perspiration and a rise in finger temperature.

Two subjects whose skin temperatures fell likewise exhibited definite slowing of the rate of flow in the capillary stream in the nail folds. No changes in the number of the capillary loops or in the size and shape of the stream were observed. The accompanying two charts show almost identical curves of skin temperatures in the fingers and blood sugar levels in one subject who participated in both parts of the experiment. Such definite results were by no means the rule; we merely point out the parallelism that can occur following inhalation of cigaret smoke and ingestion of lobeline. The patient was a stable individual desirous of giving up smoking, thoroughly cooperative and interested in the experiment, and we believe that emotional factors were at a minimum.

COMMENT

Recent studies have established the fact that the use of tobacco is definitely contraindicated in the presence of certain pathologic processes; for example, diseases producing impairment of the peripheral circulation, and gastric and duodenal ulcers. The problem of forcing complete abstinence from tobacco on certain patients has become a major one in medical practice. Any means of overcoming a long standing tobacco habit with a minimum of inconvenience to the patient would be an important addition to the therapeutic armamentarium. And yet the usefulness of any "cure" is curtailed if it is too disagreeable.

We therefore investigated the possibilities of lobeline sulfate as a substitution medication. Our experiences lead us to conclude that the effects of ingestion of the drug are too unpleasant to warrant its use for this purpose in the doses recommended. Not only does it produce gastro-intestinal symptoms that run the gamut, from a few eructations to severe nausea, epigastric distress, and even vomiting, but it also causes loss of appetite, states best described by patients as an "unsettled feeling," and in some cases diminished ability to carry on the daily routine. Patients will not willingly take a drug which causes them to suffer epigastric distress or to vomit at unpredicted times. They prefer to stop smoking through effort of will. The crystalline, pure salts appear to be as guilty as the amorphous drug with respect to action on the gastro-intestinal system.

The results of the second part of the experiment, although not conclusive in such a small series, indicate nevertheless a trend toward nicotine-like action with regard to the circulation of blood through the small vessels of the extremities. After ingestion of the drug some cases showed, like nicotine, a definite drop in skin temperatures; none showed an upward tendency. This effect of a small dose of the drug by mouth is in accord with the experimental work of Camp[12] on animals. He states:

> If the superior cervical ganglion of a rabbit is painted with alpha-lobelin, a definite constriction of the ear vessels is seen. Following this there is a dilatation. Stimulation of the preganglionic fibers and the ganglion itself produces no effect, while stimulation of the postganglionic fiber produces a constriction. This is absolute evidence that the ganglion is no longer able to transmit impulses. I conclude, then, that as with nicotine the change in the caliber of the blood vessels and hence the change in blood pressure is for the most part due to the stimulation of the ganglion cells to the blood vessels; the rise from activation of the constrictors, and the fall from activation of the dilators, and vagus action on the heart.

Any drug that causes a vasoconstriction, even though it is temporary and even though the drug is used for only a limited period, is contraindicated in diseases of the circulation due to spasm or occlusion of blood vessels.

The effect of lobeline sulfate on the blood sugar level was not constant in this series in which the drug was given by mouth, although marked rises were noted in two cases. Following inhalation of tobacco smoke there was either a rise or no change in the blood sugar level.

No demonstrable change in the rate of respiration was noted in those who took varying amounts for a period of days or in those who took single doses of 0.008 Gm. under close observation, except in those subjects who experienced nausea or pronounced epigastric pain. Blood pressures of several members of the former group also showed no change.

In this clinical study we confined our observations to the effects of the oral administration of the drug to

human beings, because of the purpose for which the drug was recommended. In such circumstances, actions are admittedly variable and not sharply defined. Careful experimental work on animals, in which parenteral routes of administration were used, have been noted throughout this paper. King, Hosmer and Dresbach [11] cite the case of a healthy human subject given 0.21 mg. per kilogram of alpha-lobelin [23] intravenously. Within thirty seconds he had inspired deeply several times, groaned, become pale, rolled his eyes and experienced knifelike precordial pain and dizziness. There was no nausea or vomiting. Hyperglycemia occurred. Norris and Weiss, giving twenty-one men doses of from 10 to 20 mg. of alpha-lobeline subcutaneously or intramuscularly, found no appreciable stimulation of respiration but many of the unpleasant gastro-intestinal side actions which we noted following oral administration.

The question of dosage of lobeline sulfate is important. It is possible that a smaller amount of the drug might achieve the desired effect without the unpleasant side actions. We have tried a few subjects with 0.004 Gm. (one-sixteenth grain) capsules, to be taken when the urge for a smoke manifested itself. Thus far we have found one in four who states that his cigaret smoking has fallen off almost completely, his appetite has improved and generally he feels better. The other three do not report similar success; one suffered from mild nausea which did prevent smoking; one had a vague unsettled feeling with no effect on his desire to smoke, and the third noted no results of any sort whatever.

The drug by its undesirable effects appears self limiting as to dosage. In view of its established toxicity, however, a note of warning should be sounded against the use of the large doses mentioned by Dorsey,[2] especially in those patients with cardiac disease or peptic ulcers, who together constitute a large portion of the patients for whom heavy smoking is inadvisable.

Finally, the problem of the permanent status of the patient with respect to his former habit arises when he has gone so far along the road to complete abstinence from tobacco that he no longer requires substitution medication. Typical is the experience of the patient suffering from thrombo-angiitis obliterans, whom we have followed for three years. From a peak of heavy smoking he has brought himself down to a level of two or three cigarets daily, and there he has remained. He eagerly agreed to become one of the subjects for investigation. He took one capsule a day for three days, during which period he had no desire to smoke, but at the same time his appetite fell off in such alarming proportions that he discontinued the drug after the third day. On the fourth day there was still no urge to smoke, but on the fifth day it became manifest, and he succumbed and lit a cigaret. If he had continued to take the lobeline sulfate the nicotine-like effect would still have been present in his system and the object of abstinence from tobacco defeated. In the last analysis no substitution drug or product which will tide a patient over the period of transition from smoker to nonsmoker will prevent him from resuming the pleasant habit when it is stopped. Only the combination of clear and emphatic explanation on the part of the physician, and determined cooperation on the part of the patient, will accomplish this desired end.

23. King, Hosmer and Dresbach [11] and Norris and Weiss [12] worked with the proprietary preparation alpha-lobelin. It was partly on the basis of the work of Norris and Weiss [12] that alpha-lobelin was declared not acceptable for New and Nonofficial Remedies (J. A. M. A. **100**: 1933 (June 17) 1933).

CONCLUSIONS

1. Lobeline sulfate in doses of 0.008 Gm. (one-eighth grain) orally is not suitable for general use as a "cure" for the tobacco habit. The symptoms are predominantly gastro-intestinal, variable from patient to patient, and in general too drastic in most individuals.

2. Lobeline sulfate produces a nicotine-like effect on the peripheral circulation. In certain individuals a vasoconstriction with a drop in surface temperature occurs. This is not as constant, when the mentioned dosage and route of administration are used, as the effect obtained by smoking a cigaret.

3. Lobeline (administered in the form of lobeline sulfate), like nicotine, produces an elevation in blood sugar in certain individuals.

4. Further study with smaller doses may increase its usefulness for the purpose, but its widespread use should not be encouraged until such studies have been completed.

115 East Sixty-First Street.

Clinical Notes, Suggestions and New Instruments

MENINGO-ENCEPHALITIS AND RUBELLA

CHARLES F. READ, M.D., ELGIN, ILL.

The occasional occurrence of meningo-encephalitis in connection with many of the acute exanthems is well established. Few cases, however, have been reported in connection with rubella. German measles has the reputation of being an innocuous disease; in fact, so harmless that the public often makes its own diagnosis and does not even consult a physician. In view of this situation, it seems proper to call attention again to the fact that encephalitis occurs in connection with this disease and to report an additional case.

In 1929 Brock related a case in which severe occipital headaches developed in a woman, aged 23, three days after the appearance of a rash, with rigidity of the neck, divergent strabismus and Babinski reflex on the right side. This case is included in the tabulation of Merritt and Koskoff.[1] These authors, however, do not cite the case, with autopsy, reported by Briggs:[2] A white boy, aged 10 years, after apparent recovery on the third day, was permitted to play in the snow. Immediately following this exposure paraphasia, lateral nystagmus, slight papillary edema, paresis of the right arm, and Babinski, Gordon and Oppenheim reflexes of the right leg developed, and then a convulsion, after which the left leg also showed pathologic reflexes. "Alternating spastic and flaccid paralysis" of both lower extremities then occurred and the temperature rose to 107 F. (pneumonia). The spinal fluid was clear, the cells numbered 51 and were practically all lymphocytes and sugar was 65 mg. Death occurred within twelve hours of the onset of symptoms.

The postmortem examination in this case is perhaps the only one on record with any report of the pathologic changes of the brain, and in this respect it is somewhat incomplete. The gross manifestations were bronchopneumonia and petechial hemorrhages of the white substance of the brain. Microscopically there was "definite perivascular infiltration of lymphocytes and polymorphonuclear leukocytes at many points. In certain areas the small vessels were also surrounded by collections of red blood cells."

The same author mentions personal knowledge of at least three other encephalitic sequelae in the same epidemic, aside from the two cases reported at some length and here recorded.

Merritt and Koskoff's article deals with four cases seen in a Massachusetts epidemic early in 1935, describes these in detail and presents tabulations of the neurologic signs and symptoms

Read before the Chicago Neurological Society, Feb. 18, 1937.

1. Merritt, H. H., and Koskoff, Y. D.: Am. J. M. Sc. **191**: 690-696 (May) 1936.

2. Briggs, J. F.: J. Pediat. **7**: 609 (Nov.) 1935.

in seven other cases gathered from the literature, omitting, however, the aforementioned case of Briggs as well as a few others.

The patients (eighteen as tabulated by me, including my own) ranged in age from 3 to 33 years, with a slight preponderance of males (ten). The onset occurred from two to seven days after the appearance of the rash. Headache was rather common (eight cases); convulsions were frequent (nine); rigidity of the neck was less frequent (five). Mental confusion, or stupor, was often present (thirteen). Nystagmus, diplopia, strabismus or conjugate deviation occurred in seven cases. Paresis or paralysis was mentioned specifically in only four cases. Babinski's toe sign was noted in ten and cerebellar signs in but two. The febrile reaction apparently was not considered important enough to report in the majority of cases but ranged up to 104 F.

Examination of the spinal fluid showed but one patient with a measured increase of pressure (400 mm. of water). The cell count varied from 5 to 400. The protein was increased in six of the seven cases examined. The sugar of the spinal fluid, when determined, was never beyond normal range. In five cases (Merritt and Koskoff's [1] and Goudron's [3]) the colloidal gold reaction was moderately increased in the middle range in four. One was entirely negative.

REPORT OF CASE

E. K., a white man,[4] aged 26, was seen Feb. 18, 1936, during an epidemic of rubella which involved many adults. At the time of examination the diagnosis of encephalitis had already been made, the problem merely being that of prognosis and treatment. The patient had complained on February 8 of aching, with no symptoms of ordinary measles. He stated that on the 12th a moderate rosy colored eruption developed on his chest, which lasted only about a day. The next day he went to work as usual, but two and a half days later he came home (driving 3 miles) with thickened speech, loss of equilibrium and dizziness. He rapidly became worse. A few hours later projectile vomiting, without much nausea, developed and he was then seen for the first time by his family physician and sent to a hospital.

When I examined him on the 18th he was evidently very ill, with some twitching of the fingers and thickened rambling speech, though he answered a few questions slowly and to the point. Although he complained of diplopia, there was no noticeable strabismus but a lateral nystagmus. The pupils reacted to light and in accommodation, and the fundi were normal. There was rigidity of the neck, but the Kernig and abnormal reflexes were absent. The knee jerks were exaggerated. Paralysis did not exist as far as could be ascertained in his semistuporous state. The condition of the patient was not conducive to adequate testing for cerebellar involvement.

Spinal puncture on the third day of the acute illness returned clear fluid, pressure was apparently increased but not measured, cells numbered 4, globulin was negative, sugar was 88 mg. and the Wassermann reaction was negative.

There were 4,100,000 red cells, 8,650 white cells, with polymorphonuclear leukocytes 74 per cent, lymphocytes 20 per cent, and large lymphocytes 6 per cent. After the withdrawal of 10 cc. of spinal fluid the patient appeared to improve, and another puncture was done on the 19th for further removal of fluid. Treatment consisted of sedatives, with dextrose by proctoclysis and intravenously. Nursing notes of February 16 showed almost continuous twitching of the fingers and of the arms and shoulders at times, complaints of dizziness (although confined to bed) and vomiting. Vomiting continued on the 17th, with hiccups. The patient was continent, voided and moved the bowels. Hiccups were again noted on the 18th, as well as vomiting, but the patient was reported to be better. Headache persisted for several days (possibly post puncture?) but he rapidly improved and on the 21st sat up, with the help of a backrest, to eat.

On the eighth day after the onset, headache was still present and he felt "tired." On the 25th he was still dizzy and had headache but was sent home on the 26th, the tenth day after the onset of encephalitic symptoms. He remained a few days in bed, rapidly convalesced and was at work within a month of the onset, though he said that he fatigued easily for a year afterward.

3. Goudron, M. M.: Bull. Soc. de méd. mil. Fr., April 1933, p. 116.
4. This case was seen by the courtesy of Dr. O. D. Mulliken of Elgin.

The temperature never rose above 99.2 F.; the pulse was slow (between 40 and 60) until convalescence was well established; respiration was not affected. Paralysis did not develop. Vomiting, dizziness and loss of equilibrium, together with a lateral nystagmus and diplopia, were outstanding features. Headache appeared only after the spinal puncture.

The patient has remained well up to the present time, aside from an operation for acute appendicitis. Concerning his illness, he later said: "My mind was clear but worked slowly. I knew what was going on about me except at one time when I thought I was in some great laboratory. I had to concentrate on any movement, and then after I had worked awfully hard to move the hand and arm an inch or two it would fly up high, past where I wanted it to go (cerebellar ataxia?). My tongue felt 2 inches thick but I could get the right words if I had time enough."

CONCLUSIONS

Another case of encephalitis associated with rubella is added to the limited literature on this subject. Six cases are added to Merritt and Koskoff's list of May 1936, bringing the total in the literature up to eighteen.[5] There were two deaths, a percentage of 11.1. One of these was probably attributable to pneumonia. Although the percentage of patients with rubella in whom encephalitis develops is not large, the possibility of this complication should be kept in mind, especially in view of the frequency of German measles and the apparently innocuous character of the disease.

Elgin State Hospital.

IMPROVED METHOD OF USE OF LATEX

JOSEPH K. NARAT, M.D., CHICAGO
Attending Surgeon, St. Elizabeth Hospital

In the last few years latex has been recommended repeatedly as a substitute for collodion in dermatology. Straus [1] recommended its use in surgical conditions, particularly for the protection of skin edges around an enterostomy. The disadvantage of the natural rubber latex is the occasional occurrence of fermentation. It occurred to me that a synthetic latex might overcome this difficulty.

"Du Prene" latex [2] is made by emulsifying chloroprene in water and allowing it to polymerize under carefully controlled conditions. The resulting product resembles vulcanized natural rubber latex but contains neither bacteria, sugars nor proteins; therefore there is no danger of instability due to fermentation.

Difficulties were encountered in obtaining a uniform film of "Du Prene" latex on the skin. Therefore an attempt was made to mix normal rubber latex with an alkaline "Du Prene" latex. It was found that unless special precautions are taken coagulation immediately occurs. Stabilized alkaline "Du Prene" and natural rubber latices may be made in accordance with the accompanying formulas.

Stabilized "Du Prene" Latex

	Cc.
"Du Prene" latex (45% "Du Prene")	100
29% aqueous ammonia	2
15% Aquarex D solution	3

The Aquarex D solution should be mixed with the ammonia before it is added to the latex.

Stabilized Normal Rubber Latex

	Cc.
Normal latex (about 37% solids)	100
15% Aquarex D solution	12

If this stabilized rubber latex is poured slowly into the stabilized "Du Prene" latex with careful stirring, no coagulation or flocculation will occur. A mixture of 25 cc. of the stabilized rubber latex with 100 cc. of stabilized alkaline "Du Prene" latex is recommended. Films deposited from mixtures

5. Cases not included in Merritt and Koskoff's review include: Epstein and Loup: Rev. méd. de la Suisse Rom. **50**: 161 (March 10) 1930.
Potter, Olive: Brit. M. J. **2**: 1084 (Dec. 27) 1930.
Baumgartner, E. A.: New York State J. Med. **36**: 907 (June 15) 1936.
Briggs.[3] Goudron.[3]

1. Straus, F. H.: Prevention of Skin Digestion in High Intestinal Fistulas, J. A. M. A. **105**: 1345 (Oct. 26) 1935.
2. The product was supplied by E. I. DuPont De Nemours & Co., Inc. Made by dissolving 15 Gm. of Aquarex D in 85 cc. of water. The product is manufactured by E. I. DuPont De Nemours & Co., Inc.

of the two types of latex are softer and more flexible at room temperature than are those formed by the natural latex alone.

This improved latex is a cheap and efficient substitute for the collodion, over which it has the advantage of being very flexible and more adherent to the skin. No fermentation occurs in the suggested mixture. The product is especially recommended for the protection of the skin in the vicinity of artificial orifices, such as gastrostomy, enterostomy, cystostomy and ureteral fistula.

1200 North Ashland Avenue.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

PAUL NICHOLAS LEECH, Secretary.

THE PRESENT STATUS OF VINETHENE

The Council published a preliminary report on Vinyl Ether-Merck in 1934,[1] deferring consideration of this anesthetic agent until additional evidence had accumulated and until the firm marketed the product. The Council has recognized the firm's right to the name Vinethene. It was, therefore, necessary to consider the evidence which has accumulated since 1934 (when the preliminary report was published) in order to determine the acceptability of the product itself, its indications and contraindications as well as its limitations and safety.

EXPERIMENTAL OBSERVATIONS

Pharmacology.—Bourne,[2] who studied the drug experimentally and clinically, noted that it is not useful in experimental animals. Nevertheless it is extremely important that due consideration be given to the experimental observations that have been reported. The variations in its effects on human beings and animals may be due to an actual difference in susceptibility, but the present evidence does not warrant granting this surmise.

Vinethene, which is essentially divinyl ether, $CH_2{=}CH\text{-}O\text{-}CH{=}CH_2$, differs from ether, U. S. P. (diethyl ether, $CH_3\text{-}CH_2\text{-}O\text{-}CH_2\text{-}CH_3$) in that it is a more toxic agent although there is a corresponding decrease in the concentration necessary for anesthesia, which may be an advantage if it is properly employed. Goldschmidt[3] noted that the absolute difference between the anesthetic and lethal concentrations in the blood was about the same in dogs for the two ethers; but he also noted a ratio of 1 to 7 for concentration necessary for anesthesia in human beings, whereas in animals the ratio had been calculated to be about 1 to 4 (vinethene to ether). He considered the lethal concentration to be about one-half that for ether in animals. According to these figures, vinethene would be twice as safe as ether for animals; but this has not been borne out by subsequent evidence.

Recently Molitor[4] of Merck & Co. has made a rather extensive study of the toxic effects of Vinethene. The toxicity was studied according to the method of Fuehner.[5] Molitor also checked the studies of von Brandis.[6] He administered Vinethene to 5,000 white mice and gave ether to 300 control animals. He considered the toxicity of the two ethers similar and confirmed the observations of von Brandis in noting that 360 of 445 mice which recovered from the anesthesia died later—mostly during the succeeding fifteen hours. Neither Molitor nor von Brandis was able to determine the cause of death in these cases, but Molitor believed that anoxemia and respiratory complications could be excluded because a control series using premedication with atropine and carbon dioxide absorption technic gave essentially the same results. He expressed the opinion that the late deaths might be due to a racial hypersensitivity, since rats exposed to the same procedure did not succumb in this manner. He concluded that the lethal dose (dose producing 50 per cent mortality) of ethyl ether is 1.80 millimols per liter of air, of chloroform 0.32 millimol per liter of air, and of Vinethene 2.11 millimols per liter of air.

Effects on the Liver.—Goldschmidt and his co-workers[3] reported liver necrosis in dogs after several hours of Vinethene anesthetization and later studied[7] the relation of anesthesia to liver damage. They reviewed the work of Leake, Knoefel and Guedel[8] and studied liver damage following chloroform, Vinethene and ether administered by means of a Gwathmey three-chamber volatilizer with the addition of a reservoir between the volatilizing chambers and the mask in dogs on a normal and high carbohydrate diet. They used sodium amytal anesthetization to indicate that the anesthetic state itself was not responsible for these changes but that they were due to the inhalation of volatile anesthetic agents. They found that necrotizing effects of chloroform and Vinethene on the liver cells of the dog are largely prevented by admixing the anesthetic with oxygen. High carbohydrate diet was as effective as oxygen in protecting the dogs against chloroform and more effective in protecting them against Vinethene.

Other Experimental Observations.—Bourne and Raginsky[2c] noted that dogs which developed cyanosis during anesthesia developed liver necrosis but that otherwise there was no effect even on livers previously damaged by chloroform. Essex[9] reported uniformly rapid induction in rabbits and marked variation of induction in dogs. Goldschmidt[3] noted running movements in dogs in which it was difficult to maintain anesthesia, and Waters[10] reported these running movements so marked that he thought he was dealing with a different drug and discontinued his experiments. Later he repeated his experiments and noted the same phenomena even when the anesthetic was pushed. Molitor[4] found that the rapidity of induction in mice was dependent on the temperature although rapidity of recovery was not.

Irritation and Possible Contaminants.—Although Vinethene is said to be less irritating than ether, Goldschmidt[3] noted a considerable amount of mucus in dogs (and human beings). It developed after Vinethene had been administered for a short time and even in cases in which atropine sulfate had been given. Leake[11] thought that the mucus was due to minute traces of impurities such as formaldehyde or formic acid, which are extremely irritating in very small amounts not detectable chemically. On the other hand, Molitor[4] found decomposed Vinethene no more toxic than the pure agent in mice.

Since the publication of these reports, the A. M. A. Chemical Laboratory has found the product as marketed (Vinyl ether with 0.01 per cent of phenyl α-naphthylamine and 3.5 per cent absolute alcohol) satisfactory from a chemical standpoint.

Ravdin and his associates[12] point out that they do not know the lethal concentration of the anesthetic in man but that it probably does not exceed that of the dog, which is 68 mg. per hundred cubic centimeters of blood.

1. Preliminary Report of the Council on Vinyl Ether, J. A. M. A. **102**:44 (Jan. 6) 1934.

2. (*a*) Bourne, Wesley: Divinyl Oxide Anesthesia in Obstetrics, Lancet **1**:566 (March 17) 1934. (*b*) Bourne, Wesley, and Sparling, D. W.: Some Aspects of Vinyl Ether (Vinethene), Anesth. & Analg. (Jan.-Feb.) 1934. (*c*) Bourne, Wesley, and Raginsky, B. B.: Vinyl Ether (Vinethene) Anesthesia in Dogs, Brit. J. Anesth. **12**:62 (Jan.) 1935. (*d*) Bourne, Wesley: Vinyl Ether Obstetric Anesthesia for General Practice, J. A. M. A. **105**:2047 (Dec. 21) 1935. (*e*) Bourne, Wesley; McDowell, J. F., and Whyte, J. C.: Further Studies in Vinyl Ether (Vinethene) Obstetrical Anesthesia: Mixtures with Ethyl Ether: Effect on Coagulation Time of Blood, Anesth. & Analg. **16**:46 (Jan.-Feb.) 1937.

3. Goldschmidt, Samuel; Ravdin, I. S.; Lucke, Baldwin; Muller, G. P.; Johnston, C. G., and Ruigh, W. L.: Divinyl Ether: Experimental and Clinical Studies, J. A. M. A. **102**:21 (Jan. 6) 1934.

4. Molitor, Hans: Some Pharmacological and Toxicological Properties of Vinyl Ether, J. Pharmacol. & Exper. Therap. **57**:274 (July) 1936.

5. Fuehner, H.: Biochem. Ztschr. **115**:235, 1921.

6. von Brandis, H. J.: Vergleichende Untersuchungen über die Toxizität des Vinethens, Schmerz, Narkose, Anaesthesie **8**:84 (Oct.) 1935.

7. Goldschmidt, S.; Ravdin, I. S., and Lucke, Baldwin: Anesthesia and Liver Damage: I. The Protective Action of Oxygen Against the Necrotizing Effect of Certain Anesthetics on the Liver, J. Pharmacol. & Exper. Therap. **59**:1 (Jan.) 1937.

8. Leake, C. D.; Knoefel, P. K., and Guedel, A. E.: Anesthetic Action of Divinyl Oxide in Animals, J. Pharmacol. & Exper. Therap. **47**:5 (Jan.) 1933.

9. Essex, H. E., in discussion on Goldschmidt, Ravdin, Lucke, Muller, Johnston and Ruigh.[3]

10. Waters, R. H., in discussion on Goldschmidt, Ravdin, Lucke, Muller, Johnston and Ruigh.[3]

11. Leake, C. D., in discussion on Goldschmidt, Ravdin, Lucke, Muller, Johnston and Ruigh.[3]

12. Ravdin, I. S.; Eliason, E. L.; Coates, G. M.; Holloway, T. B.; Ferguson, L. K.; Gill, A. B., and Cook, T. J.: Divinyl Ether—A Report of Its Further Use as a General Anesthetic, J. A. M. A. **108**:1163 (April 3) 1937.

CLINICAL EXPERIENCES

Period of Anesthesia and Liver Damage.—Consideration has already been given to the experimental evidence of liver damage resulting from this anesthetic and the clinical experiences follow:

Shipway [13] used Vinethene in combination with Tribromethanol in Amylene Hydrate and claimed that the combination had no evident (?) effect on the liver. He concluded, however, that "until further clinical experience has been gained, vinyl ether should not be used for periods longer than one hour and one half in view of the slight possibility of damage to the liver." This raises the general question of possible liver damage due to prolonged use of this anesthetic. Authors of most of the recent articles have all recommended its use for shorter anesthetizations. Of interest in this connection is the report of Ravdin and his associates [12]: Forty-one of his patients received the anesthetic more than once apparently without deleterious effect: twenty-three patients were anesthetized twice, ten three times, four four times and four more than four times.

Two deaths following the prolonged clinical use of Vinethene were noted by Goldschmidt; [3] Bourne [26] reviewed these and added one from his own series. He felt that the liver changes present were not typical of liver necrosis resulting from anesthesia and therefore should not be attributed positively to the anesthesia. It must be noted that these patients received Vinethene for periods exceeding one and one-half hours, and that two of them were apparently poor anesthetic risks.

The consensus is that the optimum periods of anesthetization with Vinethene is not in excess of a half hour. Ravdin and his co-workers [12] point out the importance of volatilizing the anesthetic admixed with oxygen if it is to be used for periods exceeding one-half hour. This clinical recommendation confirms their experimental observations. The question of the method of administration also enters here. For the short anesthesia the open drop method is preferred and was used in 84 per cent of Ravdin's 2,675 cases, while the longer anesthesias require proper volatilization of the agent with oxygen as a precaution against liver damage. This is apparently easiest to maintain by the closed method.

Many authors have indicated the period of anesthesia, and it is interesting to note that some of the most favorable results have been reported with relatively short anesthesias. Ravdin's [12] series consisted of procedures that were practically all completed in less than thirty minutes. Connolly and Baker [14] reported its use in dentistry for periods of from two to sixteen minutes and Goldman,[15] also using it in dentistry, felt that it was satisfactory for this type of case.

Comparison with Ethyl Ether.—Waters [10] expressed the opinion that the induction and recovery occurring with new agents such as Vinethene should be compared with those occurring with nitrous oxide rather than with ethyl ether, as has been done in this case. This would seem to be especially true with an agent intended for short procedures. Subsequently it was found by Ravdin and his co-workers [12] to be more rapid than nitrous oxide in induction and recovery. Molitor [4] found rapidity of induction as compared with that of ether dependent on temperature, but most clinical reports [16] have noted rather consistent rapid induction as an advantage. It has been pointed out that rapid induction is related to the potency of this agent and can be safely accomplished only if the anesthetist is sufficiently familiar with the agent to appreciate the sudden depth of anesthesia which brings about this rapid induction. Overconcentration must be avoided and, since the usual eye signs are not reliable, rapid induction necessitates expert attention to the respiration if overconcentration is to be prevented. Ravdin recommends that the anesthetist exert caution lest he exceed the concentration in the blood necessary for surgical anesthesia: 18 mg. per hundred cubic centimeters for general cases and 11 mg. per hundred cubic centimeters for minor ones.

It may be granted that the action of Vinethene is characterized by rapid recovery, which does not involve any such potential danger as does the rapid induction. It has been reported by practically all the authors both experimentally and clinically.[17] Molitor [4] found that temperature of the product had no effect on rapidity of recovery experimentally.

Ravdin [12] pointed out that the period of excitement was considerably less than with ether. Dörffel [16] mentioned the infrequency of postanesthetic vomiting and Ravdin [12] claims that the incidence of untoward complications was low.

Field of Usefulness.—Originally intended as a general anesthetic with the advantages of ether and ethylene, Vinethene has been principally recommended for use in certain limited fields, as pointed out by Tucker.[18]

Beach [19] reported 2,632 cases, including neurosurgical, ophthalmologic, otolaryngologic and gynecologic as well as cases in general and orthopedic surgery, dental surgery and obstetrics. He considers it acceptable "in short cases in minor surgery, only as a supplemental agent to nitrous oxide and ethylene where increased relaxation is desired in major surgery, as an induction agent, in dental surgery and for short simple cases in the home or office, of the ambulatory type, and in cases where a gas machine is not available."

Connolly and Baker [14] used it principally in dental surgery. The extensive series reported by Ravdin and his co-workers [12] were two fifths general and neurosurgical, two fifths otolaryngologic and one fifth dental, ophthalmologic and orthopedic. They recommended it for the extraction of teeth, reduction of fractures, manipulation of joints and a large number of surgical procedures which do not require prolonged anesthesia, but which may require any degree of relaxation. Shipway [13] at one time claimed that complete abdominal relaxation was not always obtained. Other workers, including Goldschmidt,[3] however, noted satisfactory relaxation. Goldman [15] used it principally in dental surgery. Goldman employed a special apparatus which he designed for the administration of Vinethene. Connolly and Baker suggested that it be used as a substitute for nitrous oxide when the latter is not available.

Tucker [18] noted that it was preferable to ethyl chloride or chloroform and recommended its use for short painful procedures, for short operations and occasionally to reinforce other anesthetic agents. Bätzner [16] concluded that for a wide variety of operative procedures of short duration Vinethene is a most useful anesthetic substance.

Obstetrics.—Bourne [26] reported the use of Vinethene in 152 obstetric cases and later in an additional 500 cases.[26] He has always preferred the closed method of administration, but it must be remembered that many of his procedures exceed the half-hour period during which the open drop method appears to be preferable and, according to Bourne [26] and others [14] relatively safe. The closed method has the advantage of conservation of the material. He [26] has determined the effects on the liver by the bromsulfalein test. He [26] has found that it does not depress muscle tonus in the intestine and uterus. He [26] declares that it has no effect on the coagulation time. He believes there is minimal danger to both mother and child with degrees of anesthesia which are adequate and sufficient for obstetric procedures. He [26] at first claimed that it was impossible to produce analgesia with Vinethene. Later he [26] used a mixture of 25 parts of Vinethene and 75 parts of ether for producing a satisfactory obstetric anesthesia. Tucker,[18] on the other hand, does not believe that Vinethene should displace nitrous oxide in the long second stage labor case.

Other Observations.—Ruth [20] reported one case in a series of ten in which cyanosis and convulsions occurred. Anesthesia was completed with ethyl ether without mishap. Cyanosis was not observed and respiration did not cease in any of Goldman's [15] short cases. None of his patients vomited or complained of nausea. Ravdin [12] did not encounter any com-

13. Shipway, Sir F. E.: Vinethene, Brit. M. J. **1**:70 (Jan. 12) 1935.
14. Connolly, J., and Baker, R. E.: Vinethene Anesthesia, U. S. Nav. M. Bull. **34**:499 (Oct.) 1936.
15. Goldman, Victor: Vinyl Ether—A New Method of Administration, Brit. M. J. **2**:122 (July 18) 1936.
16. Bätzner, W.: München. med. Wchnschr. **82**:933 (June 7) 1935. Dörffel, E. W.: Deutsche med. Wchnschr. **61**:955 (July 14) 1935. Molitor,[4] Ravdin, Eliason, Coates, Holloway, Ferguson, Gill and Cook,[12] Goldman.[15]
17. Molitor,[4] Ravdin, Eliason, Coates, Holloway, Ferguson, Gill and Cook,[12] Goldman,[15] Dörffel.[16]
18. Tucker, Eldon B.: Observation on the Use of the Newer Anesthetics: Vinethene and Cyclopropane, Anesth. & Analg. **16**:35 (Jan.-Feb.) 1937.
19. Beach, Edward W.: Further Experiences in the Scope and Utility of Vinethene Anesthesia in 2,630 Cases, Current Researches in Anesth. & Analg. **15**:214 (Sept. & Oct.) 1936.
20. Ruth, H. S., in discussion on Goldschmidt, Ravdin, Lucke, Muller, Johnston and Ruigh.[3]

plications in his procedures—mostly of thirty minutes or less. Molitor [4] and others have pointed out the importance of an adequate supply of oxygen. This, of course, refers especially to the closed technic used for periods longer than thirty minutes.

It has been claimed that the excess of mucus which occurs with Vinethene did not increase the evidence of pulmonary complications and that it ceases at the end of anesthesia, when it is vomited. The mucus as well as the vomited material might easily be inspired, resulting in pulmonary complications, and therefore this factor may become more important when and if the anesthetic is used for longer periods.

It has been claimed that the safety of this agent is dependent on the ability and experience of the anesthetist [18] and even that it should be used by the "physician-anesthetist" and not by the layman or general practitioner.

Age.—Oehlecker [21] found its use advantageous in small children, while Beach [19] suggested its use in these patients with an ether follow on. The age range was 15 months to 75 years in Ravdin's [12] series of cases, while Goldman [15] used it in those from 7 weeks to 65 years of age.

CONCLUSIONS

Although Ravdin [12] has pointed out that Vinethene falls short of an ideal substance possessing the pharmacologic and chemical characteristics of ether and ethylene, and although the present evidence does not indicate its use to replace ether or other agents in procedures exceeding one-half hour, it appears to be a useful anesthetic for short periods when given by an anesthetist familiar with the agent. The eye signs are not useful and the depth of anesthesia must be determined by the rate, depth, regularity and character of respiration. Cyanosis should not develop; if it does, oxygen should be administered and the procedure completed under other anesthetic agents. Rapid induction is an advantage of this agent, provided overconcentration and excessive anesthesia are avoided. Rapid recovery is also an advantage.

For the present it is not recommended that the drug be used for periods exceeding one-half hour, and those employing it for any period should familiarize themselves with the nature of the compound.

As with any anesthetic agent, proper consideration should be given to age, cardiovascular disease, kidney disease, and especially pathologic conditions of the liver.

The Council voted to accept Vinethene-Merck for a period of one year for use as an anesthetic in short procedures and to publish this report at the time of acceptance.

21. Oehlecker, F.: München. med. Wchnschr. **82**: 933 (June 7) 1935.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

VINETHENE.—Vinethenum.—Vinyl Ether For Anesthesia-Merck.—CH_2 : CHOCH : CH_2 with the addition of 3.5 per cent absolute alcohol and 0.01 per cent of phenyl-α-naphthylamine.

Caution.—Vinethene is inflammable and deteriorates on exposure. It is not to be used for anesthesia if the original container has been opened longer than twenty-four hours.

Actions and Uses.—Vinethene is an inhalation anesthetic to be used for short anesthesias. It differs from ether, U. S. P., in the rapidity of its action. This property necessitates special caution in its administration. It is easy to pass from the level of surgical anesthesia to dangerous overdosage; therefore the importance of constant, close observation of the patient cannot be overemphasized. Properly watched, this rapid action is of advantage in short anesthesias, as is the prompt recovery which follows administration of the drug.

The anesthetist should familiarize himself thoroughly with the properties of Vinethene before employing it. Of major importance is the fact that the eye signs usually depended on in anesthesia are entirely unreliable. The most important single signs to follow in determining the extent of the anesthesia are the rate, depth, regularity and smoothness of respiration. If the anesthesia is administered in the proper way there should be no cyanosis and the development of such a condition is an indication for the employment of oxygen followed by the use of other anesthetic agents. Although there is usually an increased flow of saliva during maintenance, even when atropine is administered, postoperative complications have not been frequently encountered. Nausea and vomiting occur in about 5 per cent of cases.

Vinethene is intended primarily for use in minor surgical operations of short duration, and in dentistry. It has also been proposed as an induction anesthetic. It has been rather extensively used during labor and during postpartum obstetric procedures. It has, however, one major disadvantage when used in this branch of medicine—its rapid action has practically precluded its use for obtaining obstetric analgesia.

Under no circumstances should the anesthetic be pushed, and if proper relaxation and anesthesia are not obtained with low concentrations other agents should be employed. In case of overdosage respiration is likely to be inhibited and anoxemia and cyanosis to develop. Under such circumstances the anesthetic must be discontinued and measures taken to stimulate the respiratory center and respiration. The explosive and fire hazards of Vinethene are just about equal to those of ether, U. S. P.

As with any other anesthetic agent, age, cardiovascular disease, renal insufficiency or hepatic damage, particularly the latter, must be given due consideration as contraindications. It may be administered by the open drop, semiopen drop or closed machine method. It would seem at the present time that the open drop method is preferable, for the short anesthesias.

Manufactured by Merck & Co., Inc., New York. U. S. patents 2,021,872 (Nov. 19, 1935; expires 1952), 2,044,800 (June 23, 1936; expires 1953), 2,044,801 (June 23, 1936; expires 1953). U. S. trademark 297370.

Vinethene occurs as a clear, colorless liquid, with a slight purple fluorescence, possessing a characteristic odor. It is miscible with methyl alcohol. Vinethene boils at 28-31 C.

Agitate 5 cc. of vinethene in a small, chilled, glass stoppered cylinder with 2 cc. of water previously boiled: the aqueous layer should not affect blue or red litmus paper.

Concentrate 10 cc. of vinethene to about 1 cc., pour on clean, odorless filter paper: no foreign odor becomes perceptible as the last portions disappear from the paper, and the paper remains odorless.

Add 1 cc. of cold vinethene to 0.5 cc. of a cold solution of 1 Gm. of silver nitrate, dissolved in equal parts of 10 cc. stronger ammonia water and 10 cc. of water and 0.5 cc. of a solution of 1 Gm. of sodium hydroxide dissolved in 10 cc. of water, cool in ice, shake for ten seconds, stopper with rubber previously boiled with sodium hydroxide and allow to stand for thirty minutes: no deeper coloration should develop in thirty minutes than in a control prepared by using 1 cc. of benzene previously washed with a 10 per cent solution of sodium hydroxide and 1 cc. of an aqueous solution of 4 cc. of ¼ mol of cobaltic chloride, 4 cc. of ¼ mol of ferric chloride and 8 cc. of ¼ mol of copper sulfate in 100 cc. of water.

To 5 cc. of vinethene add 1 cc. of an alkaline solution of phloroglucinol prepared by dissolving 0.1 Gm. of phloroglucinol in 20 per cent sodium hydroxide solution and diluting 1 volume with 24 volumes of water, stopper with a rubber stopper previously washed with sodium hydroxide and shake vigorously for three minutes: no darker color should develop than in a control using benzene and similar quantities of the reagent.

Evaporate 10 cc. at room temperature, dry at 50 C.: the residue should not exceed 0.002 Gm.

PHYSIOLOGICAL SOLUTION OF SODIUM CHLORIDE-U. S. P. (See New and Nonofficial Remedies, 1937, p. 342).

The following dosage forms have been accepted:

Physiological Solution of Sodium Chloride, 500 cc. Bottle.
Prepared by the Abbott Laboratories, North Chicago, Ill.
Physiological Solution of Sodium Chloride, 1000 cc. Bottle.
Prepared by the Abbott Laboratories, North Chicago, Ill.

DEXTROSE (See New and Nonofficial Remedies, 1937, p. 155).

The following dosage forms have been accepted:
The Abbott Laboratories, North Chicago, Ill.

Dextrose 5% in Distilled Water: Each 100 cc. contains dextrose, U. S. P., 5.50 Gm. Supplied in bottles containing 500 and 1,000 cc.

Dextrose 10% in Distilled Water: Each 100 cc. contains dextrose, U. S. P., 11 Gm. Supplied in bottles containing 500 and 1,000 cc.

Dextrose 5% in Physiological Solution of Sodium Chloride: Each 100 cc. contains dextrose, U. S. P., 5.50 Gm. and sodium chloride, 0.85 Gm. Supplied in bottles containing 500 and 1,000 cc.

Dextrose 10% in Physiological Solution of Sodium Chloride: Each 100 cc. contains dextrose, U. S. P., 11 Gm. and sodium chloride, 0.85 Gm. Supplied in bottles containing 500 and 1,000 cc.

Dextrose 5% in Ringer's Solution: Each 100 cc. contains dextrose, U. S. P., 5.50 Gm., sodium chloride, 0.7 Gm., potassium chloride, 0.03 Gm., and calcium chloride 0.025 Gm. Supplied in bottles containing 500 and 1,000 cc.

Dextrose 5% in Lactate-Ringer's Solution: Each 100 cc. contains dextrose, U. S. P., 5.50 Gm., lactic acid (as sodium lactate), 0.24 cc., sodium chloride, 0.60 Gm., potassium chloride, 0.04 Gm., and calcium chloride, 0.02 Gm. Supplied in bottles containing 500 and 1,000 cc.

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA

THIRTY-SEVENTH ANNUAL PRESENTATION OF EDUCATIONAL DATA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

The report presented herewith for the academic year 1936-1937 includes either statistical data or editorial comment regarding the medical schools approved [1] by the Council on Medical Education and Hospitals during this period. Also included are revised lists of hospitals approved by the Council for internships and residencies in specialties. The first revision of the lists of schools for physical therapy and clinical laboratory technicians which conform to the standards adopted by the American Medical Association likewise appears in this issue.

Figures are presented covering seventy-seven medical schools in the United States and ten in Canada, 712 hospitals approved for internships, 439 hospitals offering approved residencies in specialties, fourteen schools for physical therapy technicians and 125 schools for clinical laboratory technicians.

These data are based on official reports from the institutions listed. Acknowledgment is tendered the officers of the bodies mentioned and others for their ready cooperation in supplying the facts included in this presentation as well as for other material furnished throughout the year, enabling the Council to maintain its medical student and hospital registers efficiently.

PRELIMINARY EDUCATION

The minimum standard of preliminary education for approved schools of medicine since 1918 has been not less than two full academic years, including English, theoretical and practical courses in physics and biology and in general and organic chemistry, completed in institutions approved by accrediting associations acceptable to the Council. There are six such agencies, namely:

Association of American Universities.
North Central Association of Colleges and Secondary Schools.
Middle States Association of Colleges and Secondary Schools.
New England Association of Colleges and Secondary Schools.
Southern Association of Colleges and Secondary Schools.
Northwest Association of Secondary and Higher Schools.

The Council has published annually since 1915 a list of colleges of arts and sciences approved by these agencies as a guide to medical schools in the selection of students and also to assist the prospective medical student in choosing a college for his preliminary training. The compilation for the year 1936-1937 includes 764 colleges approved by the several bodies as follows:

Association of American Universities	282
North Central	275
Southern	230
Middle States	128
Northwest	63
New England	47

Of those recognized by the Association of American Universities, all but twenty-one are approved also by their district agency. In the various groups this dual approval of 261 institutions is distributed as indicated below:

North Central	102
Middle States	60
Southern	53
New England	29
Northwest	17

These five regional associations of colleges referred to cover among them the entire United States with the exception of the far Southwest. Institutions in this territory can secure only the approval of the national group—the Association of American Universities.

Medical schools are privileged to accept applicants who have fulfilled the requirement in institutions not approved by the agencies mentioned, provided the applicant gives evidence of superior ability. Officials in selecting from the large number of applicants, however, give preference to those whose preparation has been received in institutions that are known to conform to

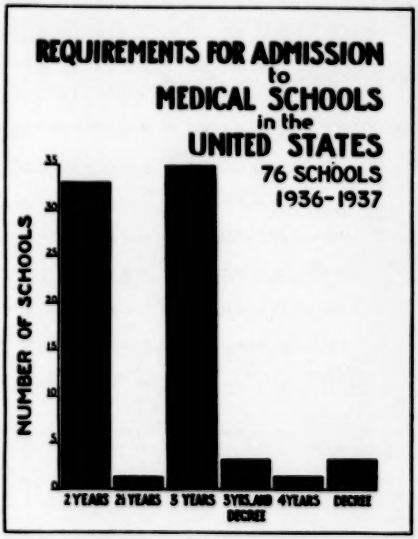

Chart 1.

accepted standards. Of students from other institutions they exact, both qualitatively and quantitatively, a higher performance.

For the session 1937-1938, fifty medical schools in the United States have adopted preliminary requirements in excess of the minimum; i. e., five require a degree, thirty-nine require three years, one requires four years, four schools will admit students with three years of college work if the baccalaureate degree is conferred in absentia at the end of the first year in medicine, and one school has a requirement equivalent to two and one-half years. Twenty-seven schools exact the two year requirement. The general tendency toward a requirement of three or more years of college work seems to be due to two factors; first, a desire for more thorough grounding in all the branches of chemistry and, second, a desire for a greater familiarity with nonscience sub-

(Continued on page 664)

1. Including two schools whose approval has been withdrawn and two schools placed on probation. See footnotes to table 1, page 661.

TABLE 1.—*Statistics of Recognized Medical Schools in the United States and Canada*

Marginal No.	Name and Location of School	1937-1938 Preliminary Requirement by Years	Length of Course, Academic Years	Students by Classes, Session 1936-1937: 1st Year	2d Year	3d Year	4th Year	5th Year or Intern Year	Totals	Graduates Since July 1, 1936	Session 1937-1938: Begins 1937	Session 1937-1938: Ends 1938	Applications for Admission to First Year Will Be Received Until	Executive Officer	Marginal No.
	ALABAMA														
1	University of Alabama School of Medicine, University (Tuscaloosa)	3	2	50	37	...	...	...	87	...	Sept. 8	May 24	.....	Stuart Graves, M.D., Dean	1
	ARKANSAS														
2	University of Arkansas School of Medicine, Little Rock	2	4	87	78	71	62	...	298	61	Sept. 29	June 7	Sept.	Frank Vinsonhaler, M.D., Dean	2
	CALIFORNIA														
3	University of California Medical School, Berkeley-San Francisco	3	5	62	55	64	62	50‡	247	47	Aug. 23	May 21	April	Langley Porter, M.D., Dean	3
4	College of Medical Evangelists, Loma Linda-Los Angeles	2	5	102	97	110	112	73‡	421	80	Sept. 1	June 12	May	E. H. Risley, M.D., Dean, Loma Linda; W. E. Macpherson, M.D., Associate Dean, Los Angeles	4
5	University of Southern California School of Medicine, Los Angeles	3	5	54	45	44	44	40‡	187	46	Sept. 20	June 4	May	Paul S. McKibben, Ph.D., Dean	5
6	Stanford University School of Medicine, San Francisco	3	5	60	56	59	63	52‡	278	53	Sept. 28§	June 15	March	Loren Roscoe Chandler, M.D., Dean	6
	COLORADO														
7	University of Colorado School of Medicine, Denver	3	4	59	48	51	49	...	207	48	Sept. 27	June 13	April	Maurice H. Rees, M.D., Dean	7
	CONNECTICUT														
8	Yale University School of Medicine, New Haven	3	4	50	53	42	43	...	188	47	Sept. 27	June 15	March	Stanhope Bayne-Jones, M.D., Dean	8
	DISTRICT OF COLUMBIA														
9	Georgetown University School of Medicine, Washington	3	4	96	78	109	124	...	407	117	Sept. 30	May 28	March	David V. McCauley, S.J., Ph.D., Dean	9
10	George Washington University School of Medicine, Washington	2	4	67	59	68	59	...	253	59	Sept. 22	June 8	.....	Earl B. McKinley, M.D., Dean	10
11	Howard University College of Medicine, Washington	2	4	42	35	24	34	...	135	35	Sept. 27	June 10	Sept.	Numa P. G. Adams, M.D., Dean	11
	GEORGIA														
12	Emory University School of Medicine, Atlanta	3	4	63	42	60	55	...	220	55	Sept. 28	June 6	.....	Russell H. Oppenheimer, M.D., Dean	12
13	University of Georgia School of Medicine, Augusta	3	4	42	35	34	32	...	143	33	Sept. 27	June 13	June	G. Lombard Kelly, M.D., Dean	13
	ILLINOIS														
14	Loyola University School of Medicine, Chicago	2	5	132	114	113	121	100‡	480	106	Sept. 27	June 11	.....	Louis D. Moorhead, M.D., Dean	14
15	Northwestern University Medical School, Chicago	3	5	128	122	102	160	148‡	502	139	Sept. 28§	June 11	April	Irving S. Cutter, M.D., Dean	15
16	University of Chicago, Rush Medical College	3	4	...	...	...	...	137‡	324‡	289	Oct. 4	June 10	March	W. H. Taliaferro, Ph.D., Dean	16
17	University of Chicago, The School of Medicine of the Division of the Biological Sciences	3	4	...	...	...	...	35‡	294‡	70	Oct. 4	June 10	March	B. C. H. Harvey, M.D., Dean of Students	17
18	University of Illinois College of Medicine, Chicago	3	5	164	168	163	151	132‡	646	127	Sept. 27	June 10	.....	David J. Davis, M.D., Dean	18
	INDIANA														
19	Indiana University School of Medicine, Bloomington-Indianapolis	3	4	115	116	89	105	...	425	97	Sept. 10	June 13	August	Burton D. Myers, M.D., Dean, Bloomington; Willis D. Gatch, M.D., Dean, Indianapolis	19
	IOWA														
20	State University of Iowa College of Medicine, Iowa City	2	4	111	106	85	80	...	382	80	Sept. 27	June 6	July	Ewen Murchison MacEwen, M.D., Dean	20
	KANSAS														
21	University of Kansas School of Medicine, Lawrence-Kansas City	2	4	79	75	67	69	...	290	69	Sept. 16§	June 6	June	H. R. Wahl, M.D., Dean	21
	KENTUCKY														
22	University of Louisville School of Medicine, Louisville	2	4	88	73	91	89	...	341	89	Sept. 11	June 4	April	John Walker Moore, M.D., Dean	22
	LOUISIANA														
23	Louisiana State University Medical Center, New Orleans	3	5	101	80	68	62	43‡	311	43	Sept. 13	May 28	.....	Arthur Vidrine, M.D., Dean	23
24	Tulane University of Louisiana School of Medicine, New Orleans	2	4	125	98	118	115	...	456	113	Sept. 24	June 8	April	Charles C. Bass, M.D., Dean	24
	MARYLAND														
25	Johns Hopkins University School of Medicine, Baltimore	Degree	4	65	70	74	65	...	274	62	Oct. 5	June 14	June	Alan M. Chesney, M.D., Dean	25
26	University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore	3	4	95	82	101	115	...	393	114	Sept. 21	June 4	Sept.	J. M. H. Rowland, M.D., Dean	26
	MASSACHUSETTS														
27	Boston University School of Medicine, Boston	3	4	67	47	44	57	...	215	56	Sept. 28	June 13	.....	Alexander S. Begg, M.D., Dean	27
28	Harvard University Medical School, Boston	2	4	125	134	137	140	...	536	139	Sept. 27	June 23	March	Charles Sidney Burwell, M.D., Dean	28
29	Tufts College Medical School, Boston	Degree	4	106	111	115	119	...	451	117	Sept. 22	June 15	March	A. Warren Stearns, M.D., Dean	29
	MICHIGAN														
30	University of Michigan Medical School, Ann Arbor	3	4	149	110	114	95	...	468	95	Sept. 27	June 18	March	A. C. Furstenberg, M.D., Dean	30
31	Wayne University College of Medicine, Detroit	3	5	66	59	76	78	85‡	279	85	Sept. 23	June 18	May	Raymond B. Allen, M.D., Dean	31
	MINNESOTA														
32	University of Minnesota Medical School, Minneapolis	2	5	130	128	133	101	158‡	492	125	Sept. 27	June 11	April	Harold S. Diehl, M.D., Dean	32
	MISSISSIPPI														
33	•University of Mississippi School of Medicine, University	3	2	30	...	...	...	...	30	...	Sept. 14	May 30	.....	B. S. Guyton, M.D., Dean	33
	MISSOURI														
34	University of Missouri School of Medicine, Columbia	3	2	39	36	...	...	...	75	...	Sept. 13	June 7	June	Dudley S. Conley, M.D., Dean	34
35	St. Louis University School of Medicine, St. Louis	2	4	129	119	107	129	...	484	122	Sept. 20	June 1	Sept.	Alphonse M. Schwitalla, S.J., Ph.D., Dean	35
36	Washington University School of Medicine, St. Louis	4	4	81	74	98	94	...	347	94	Sept. 23	June 7	Sept.	Philip A. Shaffer, Ph.D., Dean	36
	NEBRASKA														
37	Creighton University School of Medicine, Omaha	2	4	75	59	71	59	...	264	59	Sept. 21	June 2	.....	Bryan M. Riley, M.D., Dean	37
38	University of Nebraska College of Medicine, Omaha	3	4	94	78	77	87	...	336	87	Sept. 20	June 6	June	C. W. M. Poynter, M.D., Dean	38
	NEW HAMPSHIRE														
39	Dartmouth Medical School, Hanover	3	2	30	22	...	...	...	42	...	Sept. 22	June 17	Feb.	John P. Bowler, M.D., Dean	39

	NEW YORK													
40	Albany Medical College, Albany	Degree	4	31	23	24	22	...	100	21	Sept. 27	June 13	June	R. S. Cunningham, M.D., Dean	40
41	Long Island College of Medicine, Brooklyn	2½	4	94	96	91	83	...	364	81	Sept. 27	June 9	June	Jean A. Curran, M.D., Dean	41
42	University of Buffalo School of Medicine, Buffalo	2	4	72	67	63	59	...	261	58	Oct. 4	June 11	Sept.	Edward W. Koch, M.D., Dean	42
43	Cornell University Medical College, New York-Ithaca	3&Degree	4	79	75	70	72	...	296	71	Sept. 27	June 15	.....	William S. Ladd, M.D., Dean	43
44	Columbia University College of Physicians and Surgeons, New York	3	4	115	101	91	93	...	400	94	Sept. 16	June 1	Nov.	Willard C. Rappleye, M.D., Dean	44
45	New York Medical College and Flower Hospital, New York	Degree	4	75	68	59	86	...	288	89	Sept. 20	June 7	.....	Claude A. Burrett, M.D., Dean	45
46	New York University College of Medicine, New York	3&Degree	4	138	116	117	143	...	514	139	Sept. 15	June 8	Jan.	Currier McEwen, M.D., Assistant Dean	46
47	University of Rochester School of Medicine, Rochester	3	4	45	43	43	35	...	166	35	Sept. 20	June 18	March	George Hoyt Whipple, M.D., Dean	47
48	Syracuse University College of Medicine, Syracuse	2	4	48	49	36	40	...	173	40	Sept. 23	June 6	April	H. G. Weiskotten, M.D., Dean	48
	NORTH CAROLINA														
49	University of North Carolina School of Medicine, Chapel Hill	3	2	35	33	...	...	...	68	...	Sept. 16	June 7	Sept.	William deB. MacNider, M.D., Dean	49
50	Duke University School of Medicine, Durham	2	4	70	61	56	56	33†	243	55	Sept. 30	June 6	.....	Wilburt C. Davison, M.D., Dean	50
51	Wake Forest College School of Medical Sciences, Wake Forest	3	2	28	21	...	...	...	49	...	Sept. 14	May 31	June	C. C. Carpenter, M.D., Dean	51
	NORTH DAKOTA														
52	**University of North Dakota School of Medicine, Grand Forks	3	2	27	26	...	...	...	53	...	Sept. 20	June 7	June	H. E. French, M.D., Dean	52
	OHIO														
53	University of Cincinnati College of Medicine, Cincinnati	3	5	78	74	72	72	69†	296	69	Sept. 17	June 3	April	Alfred Friedlander, M.D., Dean	53
54	Western Reserve University School of Medicine, Cleveland	3&Degree	4	74	59	66	61	...	260	61	Sept. 23	June 15	Sept.	Torald Sollmann, M.D., Dean	54
55	Ohio State University College of Medicine, Columbus	3	4	82	84	80	96	...	352	94	Sept. 28	June 13	.....	J. H. J. Upham, M.D., Dean	55
	OKLAHOMA														
56	University of Oklahoma School of Medicine, Oklahoma City	2	4	69	55	55	60	...	239	59	Sept. 20	June 6	August	Robert U. Patterson, M.D., Dean	56
	OREGON														
57	University of Oregon Medical School, Portland	3	4	66	58	62	54	...	240	53	Oct. 4	June 4	July	Richard B. Dillehunt, M.D., Dean	57
	PENNSYLVANIA														
58	Hahnemann Medical College and Hospital of Philadelphia	2	4	150	142	131	121	...	544	121	Sept. 27	June 9	.....	William A. Pearson, Ph.D., Dean	58
59	Jefferson Medical College of Philadelphia	Degree	4	129	116	135	138	...	518	138	Sept. 20	June 3	Sept.	Ross V. Patterson, M.D., Dean	59
60	Temple University School of Medicine, Philadelphia	3	4	109	110	119	118	...	447	116	Sept. 22	June 16	Sept.	William N. Parkinson, M.D., Dean	60
61	University of Pennsylvania School of Medicine, Philadelphia	2	4	119	105	141	134	...	499	134	Sept. 27	June 8	March	William Pepper, M.D., Dean	61
62	Woman's Medical College of Pennsylvania, Philadelphia	3	4	22	21	30	24	...	97	23	Sept. 22	June 8	Sept.	Martha Tracy, M.D., Dean	62
63	University of Pittsburgh School of Medicine, Pittsburgh	2	4	53	52	60	64	...	229	62	Sept. 20	June 8	May	R. R. Huggins, M.D., Dean	63
	SOUTH CAROLINA														
64	Medical College of the State of South Carolina, Charleston	3	4	42	42	43	47	...	174	45	Sept. 23	June 2	July	Robert Wilson, M.D., Dean	64
	SOUTH DAKOTA														
65	**University of South Dakota School of Medicine, Vermillion	2	2	22	21	...	...	...	43	...	Sept. 15	June 6	July	Joseph C. Ohlmacher, M.D., Dean	65
	TENNESSEE														
66	University of Tennessee College of Medicine, Memphis	2	4	119	91	110	103	...	423	102	July 9‡	June 11	.....	O. W. Hyman, Ph.D., Dean	66
67	***Meharry Medical College, Nashville	2	4	78	46	41	35	...	200	35	Oct. 1	May 19	Sept.	John J. Mullowney, M.D., President	67
68	Vanderbilt University School of Medicine, Nashville	3&Degree	4	52	45	49	51	...	197	51	Sept. 30	June 8	.....	Waller S. Leathers, M.D., Dean	68
	TEXAS														
69	Baylor University College of Medicine, Dallas	2	4	103	82	75	78	...	338	78	Oct. 1	June 6	.....	W. H. Moursund, M.D., Dean	69
70	University of Texas School of Medicine, Galveston	2	4	110	97	82	78	...	367	79	Oct. 1	May 31	June	W. S. Carter, M.D., Dean	70
	UTAH														
71	University of Utah School of Medicine, Salt Lake City	3	2	30	29	...	...	...	59	...	Sept. 27	June 3	Feb.	L. L. Daines, M.D., Dean	71
	VERMONT														
72	University of Vermont College of Medicine, Burlington	2	4	36	39	39	50	...	164	50	Sept. 17	June 13	June	James N. Jenne, M.D., Dean	72
	VIRGINIA														
73	University of Virginia Department of Medicine, Charlottesville	2	4	68	59	59	61	...	247	61	Sept. 16	June 13	.....	J. Carroll Flippin, M.D., Dean	73
74	Medical College of Virginia, Richmond	3	4	80	67	80	80	...	307	82	Sept. 7	June 7	.....	Lee E. Sutton, Jr., M.D., Dean	74
	WEST VIRGINIA														
75	West Virginia University School of Medicine, Morgantown	3	2	21	20	...	...	...	41	...	Sept. 14	June 7	Sept.	Edward J. Van Liere, M.D., Dean	75
	WISCONSIN														
76	University of Wisconsin Medical School, Madison	3	4	98	90	53	59	...	300	68	Sept. 22	June 20	March	William S. Middleton, M.D., Dean	76
77	Marquette University School of Medicine, Milwaukee	2	5	94	84	69	64	67†	311	64	Sept. 24	June 15	.....	Eben J. Carey, M.D., Dean	77
	CANADA														
78	University of Alberta Faculty of Medicine, Edmonton, Alta	1	6	24	40	39	39	31§	205	32	Sept. 24	April 30	Sept.	Allan C. Rankin, M.D., Dean	78
79	University of Manitoba Faculty of Medicine, Winnipeg, Man	2	5	63	42	39	50	40‡	214	52	Sept. 17	May 18	April	A. T. Mathers, M.D., Dean	79
80	Dalhousie University Faculty of Medicine, Halifax, N. S.	2	5	60	42	44	32	31‡	178	78	Sept. 14	May 17	June	H. G. Grant, M.D., Dean	80
81	Queen's University Faculty of Medicine, Kingston, Ont	1	6	44	47	59	44	5‡§	294	47	Sept. 30	May 25	August	Frederick Etherington, M.D., Dean	81
82	University of Western Ontario Medical School, London, Ont	1	6	38	41	33	33	3‡§	223	46	Sept. 20	May 14	Sept.	F. J. H. Campbell, M.D., Dean	82
83	University of Toronto Faculty of Medicine, Toronto, Ont	1	6	152	159	146	143	117‡§	854	169	Sept. 28	May 14	Sept.	W. E. Gallie, M.D., Dean	83
84	McGill University Faculty of Medicine, Montreal, Que	3	5	169	77	94	91	112	483	103	Sept. 1	May 31	March	A. Grant Fleming, M.D., Dean	84
85	University of Montreal Faculty of Medicine, Montreal, Que	1	5	62	56	29	40	54‡	181	51	Sept. 15	June 15	August	Télesphore Parizeau, M.D., Dean	85
86	Laval University Faculty of Medicine, Quebec, Que	Degree	5	77	66	45	43	40	271	40	Sept. 21	May 31	Sept.	P. C. Dugneau, M.D., Dean	86
87	University of Saskatchewan School of Medical Sciences, Saskatoon, Sask	2	2	25	25	...	...	...	50	...	Sept. 21	May 13	August	W. S. Lindsay, M.B., Dean	87

* On probation from Oct. 11, 1936.

** Approval withdrawn Oct. 11, 1936 without prejudice to the students then enrolled. On June 6, 1937, protection was extended to students who may be enrolled in the first year class in 1937-1938.

***On probation from June 6, 1937.

† Enrolment not on above table by classes for the two medical schools of the University of Chicago.

‡ Fifth year (internship) enrolment not included in the total column.

§ Sixth year enrolment: Alberta, 32; Queen's, 46; Western Ontario, 46; Toronto, 122.

‖ Students admitted at different times of the year: Stanford, second year January 3; Northwestern, beginning of any quarter; Kansas, 1st and 2d semesters of 2d year, Sept. 16, 1937 and Jan. 31, 1938; Tennessee, September 27, December 31, 1937 and March 21, 1938.

TABLE 2—*Birthplace*

Marginal Number	Name of School	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Marginal Number
1	University of Alabama School of Medicine	46	..	..	1	1	..	..	..	2	..	..	1	..	..	1	2	..	1	..	1	1	1
2	University of Arkansas School of Medicine	2	..	215	4	..	..	..	..	1	..	..	1	2	3	2	..	..	..	1	..	..	2
3	University of California Medical School	1	3	..	131	3	1	..	1	..	1	7	1	1	1	..	..	..	..	..	2	5	3
4	College of Medical Evangelists	1	2	2	86	15	1	..	3	2	2	7	7	8	11	7	..	..	3	11	3	21	4
5	Univ. of Southern California School of Medicine	..	5	1	67	3	2	..	..	..	1	2	9	4	10	2	..	..	..	..	2	4	5
6	Stanford University School of Medicine	..	2	..	115	1	..	..	1	..	1	2	8	3	4	4	..	..	3	2	2	2	6
7	University of Colorado School of Medicine	..	..	..	2	96	..	..	..	..	..	3	2	3	4	9	2	1	..	..	3	5	7
8	Yale University School of Medicine	1	..	1	4	1	44	..	3	..	..	..	2	1	..	1	2	1	5	2	25	1	8
9	Georgetown University School of Medicine	1	..	..	3	1	13	2	18	..	1	2	..	1	..	1	..	..	6	2	36	5	9
10	George Washington Univ. School of Medicine	1	1	1	4	1	3	..	62	1	2	6	7	1	3	1	2	..	2	7	6	2	10
11	Howard University College of Medicine	..	1	..	..	..	..	..	15	1	3	..	..	3	..	1	2	..	1	3	2	1	11
12	Emory University School of Medicine	17	..	1	..	..	1	..	..	22	133	..	..	..	..	..	..	1	..	..	..	..	12
13	University of Georgia School of Medicine	2	..	..	..	..	..	..	..	2	119	..	..	1	..	..	..	..	..	1	1	..	13
14	Loyola University School of Medicine	..	1	..	6	1	2	..	..	3	..	1	239	14	5	1	..	..	1	..	4	14	14
15	Northwestern University Medical School	1	2	2	13	3	1	1	..	2	2	12	168	11	13	19	5	2	..	1	2	12	15
16	University of Chicago, Rush Medical College	8	..	..	10	1	1	..	..	1	..	2	87	3	9	2	2	..	..	..	5	6	16
17	University of Chicago, Div. of Biological Sciences	3	..	..	13	2	1	..	2	2	1	6	128	9	6	4	..	1	1	..	1	17	17
18	University of Illinois College of Medicine	..	..	..	2	..	..	..	..	..	1	1	503	13	6	..	4	..	..	1	5	2	18
19	Indiana University School of Medicine	..	..	..	2	2	..	..	..	..	1	1	18	341	2	7	..	..	..	..	3	2	19
20	State University of Iowa College of Medicine	..	..	..	2	..	..	..	1	..	..	..	12	..	299	5	2	..	..	..	..	4	20
21	University of Kansas School of Medicine	2	..	..	4	..	..	..	..	..	..	..	8	1	3	197	..	..	..	..	..	1	21
22	University of Louisville School of Medicine	1	1	..	5	..	2	..	..	2	2	2	6	11	..	2	182	..	..	..	..	3	22
23	Louisiana State University Medical Center	13	..	3	1	1	..	..	8	6	1	2	3	..	2	1	164	..	..	..	3	..	23
24	Tulane University of Louisiana School of Medicine	47	3	21	1	1	..	..	1	35	12	..	3	..	1	1	4	121	..	..	1	..	24
25	Johns Hopkins University School of Medicine	5	1	2	7	1	5	..	7	3	..	..	8	4	1	1	3	..	1	59	8	4	25
26	University of Maryland School of Medicine	1	..	..	1	1	9	3	5	2	2	..	1	1	..	..	..	..	1	195	6	..	26
27	Boston University School of Medicine	..	..	..	..	..	8	..	..	..	..	..	..	1	..	..	..	..	13	..	123	..	27
28	Harvard University Medical School	2	1	1	10	7	11	..	2	..	7	2	21	7	8	5	6	3	8	4	118	14	28
29	Tufts College Medical School	..	..	..	1	..	33	..	..	1	..	..	..	..	..	..	..	..	19	..	333	..	29
30	University of Michigan Medical School	2	1	..	3	..	2	..	1	1	..	..	10	14	3	3	3	..	1	1	13	234	30
31	Wayne University College of Medicine	1	..	..	2	..	2	..	..	..	..	..	11	6	1	..	1	..	1	1	3	144	31
32	University of Minnesota Medical School	..	..	..	3	..	..	..	1	..	..	..	1	1	1	2	1	..	..	..	2	1	32
33	University of Mississippi School of Medicine	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	33
34	University of Missouri School of Medicine	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	34
35	St. Louis University School of Medicine	2	3	2	29	2	5	..	..	1	2	50	15	7	8	3	..	..	..	..	6	3	35
36	Washington University School of Medicine	7	3	2	16	3	..	..	1	2	5	40	2	6	16	3	..	..	2	4	2	36	36
37	Creighton University School of Medicine	..	2	..	58	2	1	..	..	..	..	1	3	1	13	16	..	..	..	..	1	1	37
38	University of Nebraska College of Medicine	..	..	..	3	7	..	..	..	..	..	1	5	..	27	4	1	..	..	..	1	3	38
39	Dartmouth Medical School	..	..	..	..	..	3	1	..	1	1	..	1	..	..	..	..	..	..	..	10	1	39
40	Albany Medical College	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	3	..	7	..	40
41	Long Island College of Medicine	1	..	..	1	..	6	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	41
42	University of Buffalo School of Medicine	..	..	..	..	..	1	..	..	1	..	..	2	..	..	..	1	1	1	..	4	..	42
43	Columbia University College of Phys. and Surgs.	3	1	2	3	3	15	1	3	..	2	1	10	2	1	4	..	..	5	2	22	4	43
44	Cornell University Medical College	3	1	..	..	..	7	..	2	..	4	1	4	1	2	2	2	1	1	..	10	2	44
45	New York Medical College	..	..	..	2	..	8	..	..	..	..	..	..	..	..	..	..	..	..	1	9	11	45
46	New York University College of Medicine	1	..	..	2	..	9	..	..	..	2	..	2	..	..	..	..	1	..	..	14	..	46
47	University of Rochester School of Medicine	..	..	..	5	..	7	..	1	..	..	..	4	1	1	..	..	..	1	..	10	3	47
48	Syracuse University College of Medicine	..	..	..	..	..	2	..	..	..	..	..	1	..	1	..	..	..	1	..	1	..	48
49	University of North Carolina School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	49
50	Duke University School of Medicine	5	..	..	4	..	3	1	3	4	8	..	6	3	4	..	2	1	1	7	4	3	50
51	Wake Forest College School of Medical Sciences	1	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	1	..	..	..	51
52	University of North Dakota School of Medicine	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	52
53	University of Cincinnati College of Medicine	..	..	..	3	..	..	..	1	..	..	..	2	7	..	..	28	..	..	..	..	..	53
54	Western Reserve University School of Medicine	..	..	..	1	1	3	..	1	..	1	6	4	..	..	2	..	..	..	..	2	..	54
55	Ohio State University College of Medicine	2	..	..	..	..	1	..	..	..	..	6	7	..	2	2	..	..	..	..	2	1	55
56	University of Oklahoma School of Medicine	3	..	11	4	1	..	..	..	1	1	3	..	2	11	..	..	..	..	..	..	1	56
57	University of Oregon Medical School	..	1	..	4	..	1	..	..	..	12	7	..	2	1	..	..	..	..	..	1	..	57
58	Hahnemann Medical College	..	..	1	1	..	11	6	1	..	..	7	4	2	1	..	1	2	..	11	2	8	58
59	Jefferson Medical College of Philadelphia	1	..	..	4	..	7	13	3	3	2	1	2	..	..	1	..	..	2	1	6	3	59
60	Temple University School of Medicine	1	..	..	1	..	2	2	1	2	1	..	2	..	2	2	..	1	2	1	1	60	60
61	University of Pennsylvania School of Medicine	3	1	..	4	2	1	3	1	..	1	1	2	1	..	4	3	..	8	1	12	1	61
62	Woman's Medical College of Pennsylvania	..	..	..	..	..	3	..	..	..	1	1	..	1	..	..	..	..	..	..	..	1	62
63	University of Pittsburgh School of Medicine	..	..	..	1	..	1	1	1	..	1	..	..	..	..	..	..	..	..	..	1	..	63
64	Medical College of the State of South Carolina	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	64
65	University of South Dakota School of Medicine	..	..	..	..	..	..	..	..	1	..	2	..	6	..	..	..	..	..	..	..	..	65
66	University of Tennessee College of Medicine	19	..	10	4	..	1	..	1	4	3	..	10	2	2	..	27	..	..	..	3	..	66
67	Meharry Medical College	5	..	5	1	..	..	..	8	8	9	..	4	1	..	2	2	8	1	5	1	2	67
68	Vanderbilt University School of Medicine	16	..	3	1	..	..	..	..	4	4	1	3	1	..	..	35	..	..	1	1	6	68
69	Baylor University College of Medicine	2	1	..	4	3	..	..	1	..	..	..	3	..	..	3	2	2	..	..	..	..	69
70	University of Texas School of Medicine	..	..	6	..	3	1	..	1	..	2	1	..	1	..	2	..	4	..	..	..	1	70
71	University of Utah School of Medicine	..	..	..	..	..	..	..	..	..	..	8	3	..	..	1	..	..	..	..	..	..	71
72	University of Vermont College of Medicine	..	..	..	1	1	13	1	..	..	..	..	..	..	..	..	..	..	7	..	14	..	72
73	University of Virginia Department of Medicine	1	..	..	1	..	2	4	3	1	3	..	..	..	..	..	2	..	1	5	2	1	73
74	Medical College of Virginia	1	..	..	2	..	2	..	4	3	3	1	1	..	2	..	3	..	..	2	4	2	74
75	West Virginia University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	75
76	University of Wisconsin Medical School	..	..	..	1	..	..	..	..	1	..	18	4	2	1	..	..	..	..	..	1	4	76
77	Marquette University School of Medicine	..	..	..	8	..	2	1	..	..	..	8	1	3	..	..	..	..	..	..	..	21	77
78	University of Alberta Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	1	78
79	University of Manitoba Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	79
80	Dalhousie University Faculty of Medicine	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	80
81	Queen's University Faculty of Medicine	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	81
82	University of Western Ontario Medical School	..	..	..	..	..	4	..	..	1	..	..	..	..	..	..	..	..	1	..	2	2	82
83	University of Toronto Faculty of Medicine	..	..	..	1	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	3	83
84	McGill University Faculty of Medicine	..	1	..	37	1	5	..	..	1	1	4	1	1	..	..	1	4	2	25	5	84	84
85	University of Montreal Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	4	..	85	85
86	Laval University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	2	..	86	86
87	Univ. of Saskatchewan School of Med. Sciences	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	87
	Totals	236	38	283	716	177	272	41	154	133	356	90	1556	527	484	357	353	314	113	325	911	615	

V 1
193

of Students

Marginal Number	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U.S. Territories and Possessions	Canada	Foreign	Totals	Marginal Number
1	..	1	..	..	..	2	..	5	..	11	2	1	3	..	..	2	1	..	..	1	4	..	1	1	..	..	..	..	..	..	87	1
2	..	2	6	2	..	..	..	11	1	24	1	..	3	5	..	1	..	..	1	1	4	..	1	4	2	..	..	..	..	..	298	2
3	6	..	4	2	1	..	..	5	3	14	..	1	2	1	5	6	..	..	1	1	1	2	..	1	4	..	2	1	3	7	20	247	3
4	9	1	7	5	4	4	1	5	3	18	2	3	11	5	8	14	..	..	5	6	7	1	..	2	24	1	10	1	8	18	43	421	4
5	3	..	5	5	8	1	..	1	..	10	..	1	5	..	1	7	1	..	1	..	4	..	..	2	3	..	..	1	2	5	5	187	5
6	2	..	..	3	5	2	..	5	3	10	..	..	2	1	5	6	1	..	1	..	3	9	..	..	11	..	..	2	2	5	12	238	6
7	1	..	10	1	8	1	..	3	4	9	..	..	3	3	3	6	1	1	1	..	2	7	..	1	..	2	2	1	3	1	7	207	7
8	2	..	2	..	..	..	1	10	..	37	..	..	8	..	1	8	5	..	..	..	1	..	..	2	2	3	..	..	..	4	8	188	8
9	..	..	3	1	..	..	2	26	..	146	2	1	7	..	..	52	15	..	..	..	1	..	..	7	2	3	..	..	9	..	16	407	9
10	1	1	1	1	..	1	..	10	1	32	3	..	7	..	..	35	1	2	1	2	1	10	..	10	3	3	1	1	..	1	13	253	10
11	1	..	..	..	..	..	..	10	1	20	6	..	2	1	..	14	1	3	..	..	3	..	..	12	..	3	..	1	..	..	17	135	11
12	..	2	..	..	..	1	..	..	..	9	12	..	3	..	..	..	..	..	..	2	..	..	..	..	..	2	..	..	..	1	1	220	12
13	..	1	..	..	..	..	..	1	..	4	3	..	..	..	..	..	..	1	..	1	1	..	..	..	..	2	1	..	..	..	2	143	13
14	6	..	1	2	..	..	..	18	..	31	..	2	33	..	..	17	..	..	..	1	2	..	..	1	..	1	5	..	6	1	3	486	14
15	16	3	16	11	15	1	..	5	3	7	..	17	12	4	4	12	..	..	22	1	2	13	..	40	7	10	44	3	3	5	11	362	15
16	6	3	4	2	1	1	2	16	..	24	1	23	11	..	1	6	..	..	19	1	1	15	1	7	21	14	1	2	..	1	4	374	16
17	7	..	4	1	6	..	..	3	2	16	..	..	7	1	..	4	1	1	2	1	..	5	..	1	8	2	9	3	1	2	2	294	17
18	2	..	4	..	2	..	..	1	..	21	1	..	6	1	1	5	1	..	2	..	1	..	..	..	2	..	3	1	1	6	44	686	18
19	..	..	6	..	..	..	..	3	1	8	..	1	11	..	..	4	..	..	..	1	..	..	..	..	..	..	2	..	..	2	6	425	19
20	4	1	4	3	7	..	..	4	..	4	3	4	1	3	..	..	..	..	5	1	..	..	..	1	2	..	2	..	..	2	8	382	20
21	3	..	40	1	4	..	..	..	..	..	..	2	8	..	..	3	..	..	1	..	..	..	..	..	1	..	..	..	..	..	3	290	21
22	..	3	1	..	..	..	..	10	..	25	3	22	11	1	..	7	..	..	2	3	1	6	..	4	4	14	7	1	1	..	3	341	22
23	2	15	2	..	..	..	..	6	1	27	3	1	2	..	..	2	..	4	..	5	15	4	..	1	1	..	..	..	2	3	4	311	23
24	..	42	5	2	..	..	..	16	..	10	3	..	..	..	..	9	2	..	4	60	1	..	..	1	2	1	1	9	..	21	466	24
25	5	..	3	..	2	1	..	20	..	32	6	1	13	3	1	24	1	3	..	2	5	..	15	1	2	1	..	..	..	7	274	25
26	..	..	..	..	..	..	..	21	..	55	5	..	2	1	..	37	1	4	..	..	..	1	5	..	16	..	..	6	2	7	283	26
27	..	..	..	..	..	..	12	5	..	30	12	..	3	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	3	9	215	27
28	9	1	7	2	4	..	8	22	..	72	11	1	22	1	4	17	10	3	..	5	10	3	7	6	9	6	5	..	4	6	27	125	28
29	..	..	..	..	..	..	14	6	..	10	..	..	..	..	..	4	2	..	..	1	..	..	1	..	..	..	..	..	..	1	..	451	29
30	4	1	2	4	..	..	..	12	..	42	1	4	36	2	2	16	1	..	..	1	2	1	..	5	7	..	3	1	3	6	20	468	30
31	3	..	2	..	..	..	..	7	1	25	..	1	17	..	..	7	1	..	..	1	..	..	..	1	..	2	1	..	..	13	24	249	31
32	431	..	..	8	2	..	..	1	..	5	..	9	..	1	..	1	..	..	11	..	..	..	..	..	2	..	..	7	2	..	..	492	32
33	..	18	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	30	33
34	..	..	77	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	75	34
35	5	2	103	10	..	..	..	18	..	81	..	..	67	4	..	20	3	..	..	..	8	4	..	13	1	2	..	2	1	..	484	35
36	3	3	122	2	2	1	1	3	..	15	4	1	11	7	1	6	..	1	2	3	5	10	..	1	5	5	4	..	4	1	11	347	36
37	7	..	4	5	55	1	..	6	2	35	..	4	7	5	4	2	1	..	10	..	2	2	..	..	6	..	2	3	1	1	..	264	37
38	6	1	8	2	238	..	..	..	..	4	..	..	2	2	..	..	..	..	10	..	2	2	..	..	..	..	1	..	..	3	3	336	38
39	1	..	..	..	..	..	2	7	..	9	..	..	1	..	..	2	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	42	39
40	..	1	1	..	..	..	4	5	..	67	1	..	..	..	..	3	1	..	..	..	..	..	1	..	..	..	..	..	..	..	4	160	40
41	..	..	..	..	..	..	..	29	..	314	..	..	1	..	..	4	..	..	..	..	..	..	1	..	..	..	..	..	..	1	4	364	41
42	..	1	1	..	..	..	..	5	..	220	..	..	3	..	..	1	1	..	..	1	..	..	..	..	..	..	..	..	..	2	7	261	42
43	3	..	..	..	3	..	3	51	..	189	2	..	16	..	3	9	..	2	1	1	2	2	1	3	1	3	..	2	1	18	460	43
44	1	1	9	1	..	..	..	29	..	160	2	..	9	..	..	22	2	1	2	..	1	2	2	1	3	2	1	2	2	2	3	298	44
45	..	..	..	..	..	..	1	28	..	196	1	..	6	..	..	6	2	..	..	..	1	..	1	1	..	..	..	..	..	..	14	288	45
46	..	..	..	..	1	..	1	54	..	380	3	..	4	1	..	5	1	..	..	1	1	..	..	1	..	..	..	..	1	2	26	514	46
47	..	..	1	..	..	..	..	5	..	87	1	..	14	2	..	8	1	..	..	1	..	..	3	2	1	..	..	..	2	5	166	47
48	6	1	..	1	1	..	1	6	..	134	..	..	1	..	..	7	4	..	..	..	..	..	..	1	..	..	1	..	1	1	8	173	48
49	..	..	..	..	..	..	..	1	..	4	60	..	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	68	49
50	2	..	1	1	3	..	1	14	24	..	54	1	3	5	3	28	..	9	1	3	2	3	1	5	4	9	2	..	..	5	241	50
51	..	..	..	..	..	..	..	..	..	1	41	..	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	49	51
52	7	..	..	1	..	..	..	..	..	..	..	37	..	..	..	1	..	..	2	..	..	..	..	..	..	..	1	..	1	2	..	55	52
53	..	..	..	..	..	..	..	1	..	11	1	..	223	..	..	15	..	1	..	..	1	..	..	..	4	..	1	..	..	..	..	296	53
54	..	..	..	..	..	..	..	2	..	18	..	..	165	..	..	26	2	..	2	..	..	..	..	1	1	6	1	..	2	1	8	360	54
55	..	..	..	..	..	..	..	4	..	14	..	..	272	1	..	9	..	..	..	..	1	..	..	1	..	6	1	..	2	2	11	352	55
56	2	..	11	..	3	..	..	..	..	2	1	..	2	157	..	4	..	..	..	2	13	..	..	..	..	1	..	..	..	..	..	239	56
57	4	..	4	9	3	..	..	3	..	3	..	5	1	..	99	1	..	..	..	2	..	2	5	..	..	10	..	1	2	2	7	9	240	57
58	1	1	3	1	..	..	2	64	..	74	..	..	21	..	..	225	5	..	..	..	1	..	1	1	1	5	3	..	11	1	22	544	58
59	..	1	..	1	..	..	1	68	2	24	21	..	20	..	2	24	9	1	..	1	..	4	..	2	2	8	..	1	7	..	..	518	59
60	3	..	..	..	..	..	..	..	..	26	16	..	6	..	..	326	..	..	1	..	4	1	..	3	..	7	..	..	1	2	11	447	60
61	1	..	7	7	3	2	1	41	1	19	12	2	16	1	1	256	1	2	..	6	1	3	..	5	3	4	5	..	3	4	4	499	61
62	..	..	..	..	..	..	..	..	..	29	4	1	4	..	..	44	..	..	..	..	..	..	..	..	1	1	1	..	1	1	7	107	62
63	..	..	..	..	..	..	..	..	..	1	..	..	2	..	..	212	..	..	..	..	..	..	..	1	..	2	..	..	..	1	4	229	63
64	..	..	..	..	..	..	..	..	..	1	6	..	..	..	..	1	..	158	..	..	..	..	..	..	..	5	..	..	..	..	..	174	64
65	1	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	25	..	..	..	..	1	..	..	1	..	..	..	..	..	2	43	65
66	..	72	14	..	1	..	..	1	..	8	7	..	..	15	..	6	..	3	1	186	10	..	..	3	1	3	1	..	..	..	4	423	66
67	..	5	..	..	1	..	..	13	..	10	14	..	7	1	..	12	1	10	..	6	11	..	..	19	..	8	..	..	..	..	29	200	67
68	..	11	7	..	1	..	..	3	..	6	8	1	5	..	..	1	1	10	..	51	11	..	..	1	..	3	1	..	..	..	1	192	68
69	..	..	1	..	1	1	..	..	..	11	..	..	..	..	..	1	..	..	..	..	267	..	..	..	..	1	..	..	2	..	6	338	69
70	..	3	2	1	1	..	..	3	3	..	1	2	..	..	..	1	..	..	..	4	313	..	..	..	..	1	..	..	1	5	7	367	70
71	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	42	..	..	..	..	..	..	1	..	1	50	71
72	..	..	..	1	..	2	7	..	26	..	..	1	1	..	..	1	1	..	..	..	1	..	77	..	1	..	..	..	..	..	8	164	72
73	..	..	..	1	..	..	9	..	8	6	..	3	..	..	..	2	..	8	..	..	..	..	..	165	3	14	..	..	1	..	2	247	73
74	..	..	2	..	1	..	2	1	28	34	2	3	..	..	..	15	1	3	..	1	..	..	..	103	1	39	1	..	10	1	9	307	74
75	..	..	..	..	..	..	..	..	2	..	..	3	..	..	..	5	..	..	..	..	..	..	..	..	..	27	..	..	3	..	..	41	75
76	6	..	1	..	..	..	1	13	1	2	1	..	..	..	..	3	..	3	..	1	..	..	..	..	..	..	223	..	2	2	6	300	76
77	18	..	2	1	..	..	1	48	..	1	1	..	..	..	1	6	1	..	1	..	1	..	1	1	1	148	..	4	2	15	311	77
78	1	..	..	1	1	..	..	1	..	1	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	185	11	305	78
79	..	..	..	..	..	..	..	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	109	12	214	79
80	..	..	..	..	..	..	..	4	..	45	..	..	..	..	..	3	..	..	..	1	..	..	..	..	..	..	..	..	98	22	178	80
81	..	..	..	..	..	..	..	1	..	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	273	4	294	81
82	..	..	..	..	..	..	..	2	..	20	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	192	..	226	82
83	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	822	4	854	83
84	1	..	4	1	3	6	15	12	..	47	2	1	6	1	1	8	4	..	..	..	4	..	4	2	10	..	7	..	2	253	20	483	84
85	..	..	..	..	..	..	5	..	..	3	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	163	3	181	85
86	..	..	..	..	..	..	6	1	..	11	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	1	244	1	271	86
87	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	40	6	50	87
	597	218	535	95	365	36	91	838	69	3230	369	137	1176	280	156	1985	119	253	139	360	775	168	105	394	251	281	552	29	140	2580	765	25,031	

109
37

(Continued from page 659)

jects, such as literature, history or economics, than can be secured in two college years. The medical schools in Canada also vary in their preliminary requirement. One requires a degree for admission to a five year course; four have a six year medical course preceded by senior matriculation which is equivalent to the work of the first year in a college of arts; one school requires one year for entrance to the five year medical course; three require two years, and one has a three year prerequisite.

The preliminary requirements for admission to the medical schools in the United States for 1936-1937 are shown in chart 1. In contrast, chart 2 records the training possessed by 5,718 freshmen enrolled during this period. More than half of the students (3,181) had a college degree before beginning medicine, and 27 per

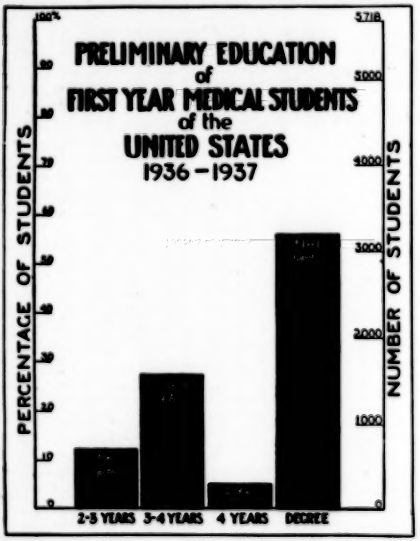

Chart 2.

cent had between three and four years, leaving 5 per cent with four years and only 12 per cent with the minimum requirement of two years.

Several medical schools which accept only those with three years of college work require that the bachelor's degree be conferred after completion of the freshman medical year. Therefore many more graduates hold the bachelor's degree than do entering freshmen. A table appears in this study recording the number of graduates of 1937 holding baccalaureate degrees (table 12). Similarly, mention is made of those who have received the degree of B.S. in medicine.

While the two year college prerequisite has been exacted by the Council for nineteen years, there are still eight states which have not revised or amended their statutes to conform, although these states, with possibly one or two exceptions, do not license other than graduates of approved schools. These states are California, Connecticut, Delaware, Massachusetts, Missouri, Nebraska, Ohio and Pennsylvania.

LENGTH OF MEDICAL COURSE

The medical course in the United States in general covers four calendar years of approximately thirty-two weeks each. Fifty-one schools offer such a course. The medical schools of the universities of Minnesota, Duke and Tennessee operate on the quarter plan, enabling the student by utilizing the summer months to complete the course in three calendar years. A good portion of the students of these schools do not elect to study during the summer months. The medical schools of the University of Chicago permit a student to progress as rapidly as he desires but, here again, the majority of students complete twelve quarters of work. It may be said that actually fifty-five schools require a four year course, including two operated on the quarter plan and two by individualized instruction and the quarter system, while twelve, including one school operated on the quarter plan, require four years and a fifth year spent as an intern or in research work, the degree being conferred after completion of the internship. Duke University requires a two year internship. The internship requirement of the medical schools of the University of Chicago was discontinued in 1936. Ten schools offer only a two year course.

Five of the medical schools of Canada offer a five year course, four have a six year course and the University of Saskatchewan offers courses in the medical sciences only which are covered in two years. Four Canadian schools require an internship for graduation. These data are included in table 1.

CURRICULUM

The curriculum to be covered in a course of four years in a medical school enjoying the Council's approval should consist of from 3,600 to 4,400 hours, distributed as from 900 to 1,100 hours a year, and should be grouped as set forth in the following schedule, each group to be allotted approximately the percentage of hours of the whole number of hours in the courses as stated:

1. Anatomy, including Embryology and Histology	14	—	18½%
2. Physiology	4½	—	6 %
3. Biochemistry	3½	—	4½%
4. Pathology, Bacteriology and Immunology	10	—	13 %
5. Pharmacology	4	—	5 %
6. Preventive Medicine and Hygiene	3	—	4 %
7. General Medicine	20	—	26½%
Neurology and Psychiatry			
Pediatrics			
Dermatology and Syphilis			
8. General Surgery	13	—	17½%
Orthopedic Surgery			
Urology			
Ophthalmology			
Otolaryngology			
Roentgenology			
9. Obstetrics and Gynecology	4	—	5 %
Total	76	—100	%
Electives	24	—	0 %

When the teaching conditions make it desirable, a subject may be transferred from one division to another.

SCHOOLS OF THE BASIC MEDICAL SCIENCES

Facts revealed by the recent medical school survey led to the preparation and adoption by the Council, at its meeting on Feb. 14, 1937, of the following statement concerning schools that do not offer a complete course. The statement as originally prepared did not include the word "Basic," this being added after further consideration by the Council at its meeting in May.

SCHOOLS OF THE BASIC MEDICAL SCIENCES

Following the recent survey of the medical schools it was decided that, effective July 1, 1939, the Council will publish a list of schools which teach acceptably gross and microscopic

V 10
1937

anatomy, biochemistry, physiology, pharmacology, bacteriology and pathology, even though they do not offer a full course leading to a medical degree.

The acceptance of courses involving the use of clinical material shall be left to the discretion of the faculties which admit to advanced standing students transferring from approved schools of the medical sciences.

Surveys of the clinical courses and facilities will be made by the Council and reported to the individual medical schools on request.

STATISTICS OF MEDICAL SCHOOLS

Table 1, pages 660 and 661, lists the medical schools in the United States and Canada approved by the Council on Medical Education and Hospitals of the American Medical Association during 1936-1937 and contains figures regarding the premedical requirement for the session 1937-1938, length of the medical course by years, enrolment by classes for the session 1936-1937, including fifth year students interning or engaged in research, the number of graduates since July 1, 1936, dates of the beginning and ending of the forthcoming session, and the month until which applications for admission to the freshman class are received. Changes in the classification that have taken place since the publication of the educational statistics in 1936 [2] can be noted in the footnotes at the bottom of the table and refer to those schools which are marked by asterisks preceding the name. Also contained in the footnotes are references to the fifth and sixth year enrolments and those schools which admit students at varying times during the year. The two medical schools of the University of Chicago do not report their students by classes and in this tabulation, therefore, only the total enrolment is given.

The data presented in this table constitute the basis also for several of the subsequent tabulations. Beginning on page 676 are given historical information and essential facts concerning the schools arranged by states.

Seventy-seven institutions in the United States and ten in Canada are listed. With the exception of four, all these schools at the present time enjoy the full approval of the Council. In eighty-five schools 6,564 freshman students were enrolled, 5,858 sophomores, 5,688 juniors, 5,673 seniors, 384 fifth year and 246 sixth year students, during the session just ended. In the two medical schools of the University of Chicago 618 students were enrolled, making a total of 25,031 in the eighty-seven schools listed. There were in the United States 5,910 freshmen, 5,269 sophomores, 5,140 juniors, 5,158 seniors and the 618 students of the University of Chicago, a total of 22,095. The total students registered by classes in the United States was 21,477. The enrolment in the ten Canadian schools was: first year 654, second year 589, third year 548, fourth year 515, fifth year 384 and sixth year 246, a total of 2,936. The 25,031 medical students enrolled do not include 1,255 in the United States and 131 in Canada interning as a requirement for the degree of Doctor of Medicine.

Since July 1, 1936, 5,885 received M.D. degrees, 5,377 from schools in the United States and 508 from Canadian institutions.

In addition there were 216 part-time, 288 special and 671 graduate students studying in medical schools.

Eleven medical schools had an enrolment of less than 100 students. None of the schools comprising this figure give the complete medical course. Thirteen schools matriculated fewer than 200 but more than 100, twenty-eight less than 300, fourteen fewer than 400 and 500 respectively, and five less than 600. Two schools matriculated more than 600. The smallest enrolment (twenty) was at the University of Mississippi School of Medicine, which for the session 1935-1936 did not offer instruction to freshmen and consequently had no sophomore class during 1936-1937. This school does not offer the complete course. The greatest number (834) were enrolled in the University of Toronto Faculty of Medicine, which has a six year course including premedical subjects. The corresponding high figure among schools in the United States was 646 at the University of Illinois College of Medicine. The lowest enrolment among four year medical colleges in the United States was 100 at Albany Medical College. This school likewise awarded M.D. degrees to the smallest group (twenty-one) since July 1, 1936. The school graduating the greatest number was Rush Medical College, which awarded 289 diplomas. This is a far greater figure than in previous years, owing to the discontinuance of the requirement of an internship for the degree and the subsequent issuance of a diploma to those who ordinarily would have received it following the internship and those who profited by the discontinuance of the requirement. The majority of schools will begin the session 1937-1938 about the middle of September and end early in June.

Of sixty-seven schools that replied to the inquiry regarding the month until which applications for admission to the first year class will be received, one replied January, two February, twelve March, nine April, four May, twelve June, four July, five August, seventeen September, and one November.

The name of the dean or administrative officer of each institution is also given in table 1.

BIRTHPLACE OF STUDENTS

In table 2, pages 662 and 663, the birth state of students in attendance in medical schools during 1936-1937 is shown by schools. The state furnishing the greatest number of students, according to state of birth, was New York with 3,226, followed by Pennsylvania with 1,985, Illinois with 1,566 and Ohio with 1,176.

From the twelve states in which no medical schools are located there were enrolled as students the following:

	Number Enrolled	Number of Schools
Arizona	38	22
Delaware	41	14
Florida	133	36
Idaho	90	33
Maine	113	35
Montana	95	34
Nevada	26	15
New Jersey	838	66
New Mexico	69	23
Rhode Island	119	39
Washington	251	44
Wyoming	29	16

There were 140 born in the United States territories and possessions studying in thirty-nine schools in the United States and four in Canada. In addition, 2,580 students of Canadian birth were also studying medicine, 131 of whom were matriculated in forty-two schools in the United States and 2,449 in the ten Canadian medical schools.

The medical school enrolment is further classified by birthplace in table 3, indicating that 14,405 are studying in the state of their birth and 10,626 elsewhere. This is particularly significant in Illinois, where, of the 2,306 students in five schools, 1,121 were born outside the state. More than 900 born elsewhere are studying in Pennsylvania. Altogether, 42.5 per cent are studying in schools located in other than their birth state. Eliminating the 1,842 born in states having no medical school, there are still 8,784 of the total number of students, 25,031, studying outside their birth state.

2. J. A. M. A. **107**:663 (Aug. 29) 1936.

A perusal of table 3 will show many instances wherein the number studying elsewhere far exceeds the number attending school in the state of birth. It also shows some states in which the contrary is the case, notably Arkansas, Georgia, Indiana, Iowa, Kansas, Minnesota, Ohio, South Carolina and Texas. Of those enrolled in medical schools in Canada, 2,449 were born in Canada, while 487 were born elsewhere.

It is conceded that this tabulation does not present an absolutely true picture in that all those studying in schools located in states other than their birthplace cannot be classed as nonresidents, since they may have established their homes in other states. It is believed, however, that the table reveals a trend which may be of interest.

TABLE 3.—*Students Classified by Birthplace*

State	Number of Schools	Attending School in State of Birth	Birthplace Elsewhere
Alabama	1	46	41
Arkansas	1	215	83
California	4	309	604
Colorado	1	99	111
Connecticut	1	44	144
District of Columbia	3	95	700
Georgia	2	232	111
Illinois	5	1,185	1,171
Indiana	1	341	84
Iowa	1	299	83
Kansas	1	197	93
Kentucky	1	182	139
Louisiana	2	285	462
Maryland	2	234	413
Massachusetts	3	574	618
Michigan	2	578	309
Minnesota	1	431	61
Mississippi	1	18	2
Missouri	3	297	699
Nebraska	2	260	307
New Hampshire	1	2	40
New York	9	1,747	815
North Carolina	3	155	265
North Dakota	1	37	16
Ohio	3	662	246
Oklahoma	1	157	82
Oregon	1	99	141
Pennsylvania	6	1,424	930
South Carolina	1	158	16
South Dakota	1	25	18
Tennessee	3	243	577
Texas	2	500	125
Utah	1	43	16
Vermont	1	77	87
Virginia	2	268	286
West Virginia	1	27	14
Wisconsin	2	371	240
Canada	10	2,449	487
Totals	87	14,405	10,626

RESIDENT AND NONRESIDENT STUDENTS

Table 4, presented for the first time this year, gives for each medical school the number of resident and nonresident students according to the individual school's definition of the word "resident." Among state universities, as well as other schools, there is a variation in the definition of the term. In some universities this is determined by the legal or permanent residence of the student, parents or guardian only, while in some schools continuous residence for six months, one, two or three years just prior to the student's application for enrolment is also required. Others require the student to be a voter; parents' home in the state established prior to beginning of premedical work; the student is a taxpayer or a dependent of a taxpayer, regardless of whether he resides in the state; self-supporting student, and each case determined by attorney after consideration of birth, citizenship, residence of parents, and so on. Of these methods the most common is the determination of residence by ascertaining whether the student, parents or guardian has been a bona fide resident for a period not less than six months. This is in force in sixteen universities. In most schools also a student coming into the state for educational purposes only and establishing residence would not be considered a resident. Among other than state universities the term "resident" is defined mostly by the home address of the student or the legal residence of the parents or guardian. Two such schools did not reply to our inquiry, while in one school a student is considered a resident if he lives in the state.

TABLE 4.—*Resident and Nonresident Students*

School	Resident Students	Non-resident Students	Totals
University of Alabama	46	41	87
University of Arkansas	215	83	298
University of California	246	1	247
College of Medical Evangelists	86	335	421
University of Southern California	175	12	187
Stanford University	194	44	238
University of Colorado	176	31	207
Yale University	59	129	188
Georgetown University	18	389	407
George Washington University	91	162	253
Howard University	15	120	135
Emory University	133	87	220
University of Georgia	135	8	143
Loyola University	239	181	420
Northwestern University	214	348	562
Rush Medical College	87	237	324
Division of Biological Sciences	128	166	294
University of Illinois	644	2	646
Indiana University	409	16	425
State University of Iowa	376	6	382
University of Kansas	258	32	290
University of Louisville	182	159	341
Louisiana State University	214	97	311
Tulane University	121	345	466
Johns Hopkins University	59	215	274
University of Maryland	240	153	393
Boston University	141	74	215
Harvard University	132	394	526
Tufts College	331	120	451
University of Michigan	343	125	468
Wayne University	267	12	279
University of Minnesota	431	61	492
University of Mississippi	19	1	20
University of Missouri	73	2	75
St. Louis University	103	381	484
Washington University	148	199	347
Creighton University	78	206	284
University of Nebraska	319	17	336
Dartmouth Medical School	2	40	42
Albany Medical College	78	22	100
Long Island College of Medicine	314	50	364
University of Buffalo	242	19	261
Columbia University	212	188	400
Cornell University	160	136	296
New York Medical College	221	67	288
New York University	427	87	514
University of Rochester	100	66	166
Syracuse University	151	22	173
University of North Carolina	60	8	68
Duke University	54	189	243
Wake Forest College	43	6	49
University of North Dakota	51	2	53
University of Cincinnati	225	71	296
Western Reserve University	193	67	260
Ohio State University	332	..	332
University of Oklahoma	237	2	239
University of Oregon	151	89	240
Hahnemann Medical College	305	239	544
Jefferson Medical College	294	224	518
Temple University	330	117	447
University of Pennsylvania	322	177	499
Woman's Medical College	48	59	107
University of Pittsburgh	228	1	229
Medical College of South Carolina	158	16	174
University of South Dakota	30	13	43
University of Tennessee	233	150	423
Meharry Medical College	6	194	200
Vanderbilt University	51	146	197
Baylor University	268	70	338
University of Texas	367	..	367
University of Utah	51	8	59
University of Vermont	103	61	164
University of Virginia	165	82	247
Medical College of Virginia	131	176	307
West Virginia University	34	7	41
University of Wisconsin	281	19	300
Marquette University	163	148	311
Totals	14,026	8,069	22,095

On the basis of these factors, in the seventy-seven approved medical schools in the United States there were 14,026 students reported as residents and 8,069 as nonresidents, a total of 22,095 in the United States. The state university enrolling the greatest number of nonresidents was the University of Maryland College of Physicians and Surgeons, which has 240 residents and 153 nonresidents, while Ohio State University Col-

lege of Medicine and the University of Texas School of Medicine did not register any nonresidents, and only two of the 646 students of the University of Illinois College of Medicine were nonresidents.

Among other than state universities it is of interest to note the resident and nonresident enrolment. Many of the schools draw their enrolment from residents of

TABLE 5.—*Schools, Students and Graduates by States* *

State	Schools	Students	Graduates
Alabama	1	87	...
Arkansas	1	206	61
California	4	1,093	226
Colorado	1	207	48
Connecticut	1	188	47
District of Columbia	3	795	211
Georgia	2	363	88
Illinois	5	2,306	741
Indiana	1	425	97
Iowa	1	382	80
Kansas	1	240	69
Kentucky	1	341	89
Louisiana	2	777	156
Maryland	2	667	177
Massachusetts	3	1,192	312
Michigan	2	747	180
Minnesota	1	492	125
Mississippi	1	39	...
Missouri	3	706	216
Nebraska	2	600	146
New Hampshire	1	42	...
New York	9	2,562	628
North Carolina	3	360	55
North Dakota	1	53	...
Ohio	5	908	224
Oklahoma	1	229	59
Oregon	1	240	53
Pennsylvania	6	2,344	594
South Carolina	1	174	45
South Dakota	1	43	...
Tennessee	3	870	188
Texas	2	705	157
Utah	1	59	...
Vermont	1	164	50
Virginia	2	554	143
West Virginia	1	41	...
Wisconsin	2	611	112
Totals	77	22,095	5,377

* Excluding fifth or intern year students.

the state. This is particularly true at Southern California, Stanford, Emory, Wayne, Long Island, Buffalo, New York Medical College, New York University, Syracuse, Cincinnati, Western Reserve, Pittsburgh and Baylor.

There is a similarity between the figures in this table and those of the preceding one classifying students by birthplace. Excluding the Canadian registration given in table 3, there were 11,956 students attending school in the state of their birth and 10,139 elsewhere, as compared with 14,026 whose legal residence is in the state in which they are pursuing their medical courses and 8,069 classified as nonresidents.

The ten schools in Canada reported 2,127 residents of Canada and 809 nonresidents. Their definition of a resident varied from students whose permanent address is within one of the provinces of Canada or the specific province in which the school is located to home address on registration, and taxpayers. The greatest number of nonresidents in any one school were enrolled at McGill (355), while only 128 residents of Canada were studying. This school has always obtained the major portion of its student body from the United States. All other institutions registered fewer than 100 nonresidents but more than twenty-five with one exception—the University of Saskatchewan—with only two out of an enrolment of fifty.

Comparing these figures with those in table 3, classifying birthplace reveals, as in the United States, somewhat similar figures—2,449 born in Canada and 487 elsewhere, compared with 2,127 residents and 809 nonresidents.

SCHOOLS, STUDENTS AND GRADUATES BY STATES

The number of schools, students and graduates for each state are given in table 5. New York, with the largest number of schools, nine, naturally had the greatest number of students and graduates, 2,562 and 628 respectively. Pennsylvania with six schools, 2,344 students and 594 graduates, Illinois with five schools, 2,306 students and 741 graduates ranks in the third largest group, while Massachusetts with three schools, 1,192 students and 312 graduates and California with four schools, 1,093 students and 226 graduates complete the group of states having a medical school enrolment over 1,000. In the seventy-seven medical schools in the United States, including those that offer only preclinical courses, there were 22,095 students and 5,377 graduates. Students interning as a requirement for the degree, or fifth year students, are not included in the figure 22,095. Also excluded are part-time, special and graduate students.

The greatest number of graduates in any one state were the 741 who completed their courses in Illinois schools. New York with four more schools than Illinois had 113 fewer graduates and Pennsylvania with one more school had 147 fewer graduates than Illinois and thirty-four fewer than New York.

REQUIRED HOSPITAL INTERNSHIPS

The medical schools and licensing boards now requiring a hospital internship for the M.D. degree and state licensure, respectively, are shown in tables 6 and 7.

TABLE 6.—*Internship Required by Medical Schools*

United States	Effective Date
University of California Medical School	1919
College of Medical Evangelists	1927
University of Southern California School of Medicine	1923
Stanford University School of Medicine	1919
Loyola University School of Medicine	1922
Northwestern University Medical School	1920
University of Illinois College of Medicine	1922
Louisiana State University Medical Center	1934
Wayne University College of Medicine	1924
University of Minnesota Medical School	1915
Duke University School of Medicine*	1932
University of Cincinnati College of Medicine	1926
Marquette University School of Medicine	1920
Canada	
University of Manitoba Faculty of Medicine	
Dalhousie University Faculty of Medicine	
McGill University Faculty of Medicine**	
University of Montreal Faculty of Medicine	

* Requires a two-year internship.
** Effective, freshman class, session 1936-1937.

TABLE 7.—*Internship Required by Medical Licensing Boards*

	Effective Date		Effective Date
Alaska	1917	Oregon	1933
Delaware	1924	Pennsylvania	1914
District of Columbia	1920	Rhode Island	1917
Illinois	1923	South Dakota	1925
Iowa	1924	Utah	1926
Michigan	1923	Vermont	1934
New Hampshire	1928	Washington	1909
New Jersey	1916	West Virginia	1932
North Dakota	1918	Wisconsin	1927
Oklahoma	1933	Wyoming	1931

A few of the medical schools will accept research or other clinical work in lieu of the internships. Thirteen schools in the United States and four in Canada exact the internship requisite. Since 1915 the M.D. degree of the University of Minnesota Medical School has been conditioned on an internship. Rush Medical College, which has required the internship for the M.D. degree since 1919, and the School of Medicine of the Division of the Biological Sciences, University of Chicago, since

1930, discontinued this formal requirement in 1936. However, as will be noted elsewhere in these statistics, 272 of the 359 graduates of these schools had or were required to serve an internship before being awarded the degree. McGill University Faculty of Medicine at McGill or at another medical school approved by it. The changed curriculum was inaugurated for the freshman class of 1936-1937. It will not affect the students who began their course under the former system.

Duke University School of Medicine grants the degree after the completion of the senior year, but all graduates are required to spend at least two years in hospital or laboratory work after graduation.

As revealed in table 7, eighteen states, Alaska and the District of Columbia require that applicants for licensure possess a hospital internship. The first state exacting this requirement was Pennsylvania in 1914 and the last one New Hampshire, which becomes effective Jan. 1, 1938.

While some of the medical schools and licensing boards may have their own list of hospitals recommended for intern training, generally the Council's list of hospitals approved for internships is followed. A revised edition will be found beginning on page 683.

During 1936-1937 there were 1,255 students of the United States and 131 in Canada reported as interning, a total of 1,386.

TABLE 8.—*Graduates from July 1, 1935, to July 1, 1936, Who Have Obtained Internships During All or Part of the Period July 1, 1936, to July 1, 1937*

School	Number Graduates	Number Interning
University of Arkansas	48	47
University of California	47*	44
College of Medical Evangelists	80*	70
University of Southern California	46*	46
Stanford University	53*	53
University of Colorado	50	50
Yale University	44	44
Georgetown University	134	134
George Washington University	69	68
Howard University	35	35
Emory University	53	52
University of Georgia	37	36
Loyola University	106*	105
Northwestern University	139*	138
Rush Medical College	286**	137
Division of Biological Sciences	70**	35
University of Illinois	137*	137
Indiana University	108	108
State University of Iowa	94	91
University of Kansas	72	69
University of Louisville	87	85
Louisiana State University	42†	42
Tulane University	112	109
Johns Hopkins University	66	64
University of Maryland	97	97
Boston University	93	93
Harvard University	134	132
Tufts College	115	115
University of Michigan	116	116
Wayne University	85*	85
University of Minnesota	125*	125
St. Louis University	116	116
Washington University	96	95
Creighton University	77	59
University of Nebraska	59	59
Albany Medical College	25	25
Long Island College	104	97
University of Buffalo	62	56
Columbia University	85	85
Cornell University	64	53
New York Medical College	77	66
New York University	131	125
University of Rochester	42	41
Syracuse University	45	45
Duke University	38†	38
University of Cincinnati	69*	69
Western Reserve University	57	57
Ohio State University	92	92
University of Oklahoma	58	56
University of Oregon	55	48
Hahnemann Medical College	58	58
Jefferson Medical College	133	133
Temple University	124	124
University of Pennsylvania	140	140
Woman's Medical College	33	33
University of Pittsburgh	60	60
Medical College of South Carolina	32	32
University of Tennessee	102	16
Meharry Medical College	32	32
Vanderbilt University	52	50
Baylor University	59	72
University of Texas	75	73
University of Vermont	41	40
University of Virginia	50	50
Medical College of Virginia	73	72
University of Wisconsin	51	51
Marquette University	64*	64
University of Alberta	21	21
University of Manitoba	52*	52
Dalhousie University	28*	28
Queen's University	41	38
University of Western Ontario	28	27
University of Toronto	126	119
McGill University	95	92
University of Montreal	51*	51
Laval University	38	13
Totals	5,836	5,484

* Completed medical course. Internship or other acceptable clinical work is a requirement for the M.D. degree.
** Internship as a requirement for the degree discontinued in 1936.
† Two year internship requirement after graduation.

reorganized its medical curriculum into a course of five years, including an internship replacing the former course spread over five academic years of seven and a half months each by a course covering four years of nine months. The fifth year may be spent in an internship in an approved hospital or in further medical study

As revealed in table 8 are enumerated the graduates of the United States and Canada from July 1, 1935, to July 1, 1936, who were serving internships during all or part of the period from July 1, 1936, to July 1, 1937. Included also are figures for those schools which require the internship or other acceptable clinical work as a requirement for graduation. There were 5,484 fifth year students or graduates serving internships during the period July 1, 1936, to July 1, 1937. The number of graduates and those who completed the medical course during the period July 1, 1935, to July 1, 1936, was 5,836; 4,314 graduates of four year medical schools and 1,522 fifth year students. Of the figure 5,836, 352 either were not successful in securing or did not desire internships. Several of the fifth year students satisfied this requirement by research or other clinical work. These 4,314 graduates and 1,522 intern students represented 3,965 graduates and 1,391 intern students of the United States and 349 graduates and 131 intern students in Canada. In the Canadian schools, of the 480 graduates or intern students, 441 were serving internships and thirty-nine are unaccounted for. In the United States there were 5,356 graduates or students, of whom 5,043 were interning, leaving 313 not serving internships during this period.

Of the 5,484 interns, 1,391 in the United States and 131 in Canada were fulfilling the intern requirement for the M.D. degree, a total of 1,522.

With the exception of four, every school in the list has more than 90 per cent of its graduates serving internships, and in thirty-seven schools 100 per cent interned. Excluding those schools that require the internship for graduation, 91.8 per cent of all graduates here listed have or are obtaining this added experience.

The two medical schools of the University of Chicago discontinued the internship requirement in 1936 and in consequence many of those who received the M.D. degree since July 1, 1936, did not serve an internship as a requisite for the degree, although many are interning. For purposes of this table it was necessary to include in the first column both those who received the M.D. degrees with and without an internship since July 1, 1936, since a similar table published in 1936 included those who were classified as intern students up to July 1, 1936, and only in this way could those interning during 1936-1937 be recorded.

GRADUATES AND INTERNSHIPS

V 10
1937

WOMEN IN MEDICINE IN THE UNITED STATES

During the past year there were 1,113 women studying medicine, twenty less than during the session 1935-1936. The percentage of women to all students for the academic year 1936-1937 was 5.1. There were 238 graduates, eight less than last year. Of the women matriculants, 107 were in attendance at the one medical college for women, while 1,006 were matriculated in sixty-eight coeducational schools. From the Woman's Medical College twenty-three were graduated, while 215 secured their degrees from coeducational institutions. These data are given in table 9. Of interest also is the fact that eleven schools enrolled more than twenty-five women. In the thirteen years since 1925, 2,771 women have graduated in medicine.

TABLE 9.—*Women in Medicine in the United States*

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905	1,073	4.1	219	4.0
1910	907	4.0	116	2.6
1915	762	4.0	92	2.6
1920	818	5.8	122	4.0
1925	910	5.0	204	5.1
1926	935	5.0	212	5.4
1927	904	4.9	189	4.7
1928	929	4.5	207	4.9
1929	925	4.4	214	4.8
1930	935	4.4	204	4.5
1931	960	4.5	217	4.6
1932	955	4.3	208	4.2
1933	1,056	4.7	214	4.4
1934	1,030	4.5	211	4.2
1935	1,027	4.7	207	4.1
1936	1,133	5.0	246	4.7
1937	1,113	5.1	238	4.4

DISTRIBUTION BY SEX

Students and graduates in the United States and Canada classified by sex are shown in table 10. There were seventy-six schools which had both men and women students in the United States and Canada, of which sixty-two had women graduates. At the one medical school for women, the Woman's Medical College of Pennsylvania, 107 students were enrolled and twenty-three graduated. Eight of the eleven schools in the United States and Canada which do not offer the complete course also had women students. Altogether there were 23,787 men and 1,244 women students, and 5,624 men and 261 women graduates. Of these, 20,982 male students and 5,139 graduates were in the schools in the United States and 2,805 and 485 respectively in Canada. Likewise there were 1,244 women students and 261 graduates in the United States and Canada respectively. Of the 23,787 and 5,624 male students and graduates, 3,804 and 692 respectively were enrolled in schools in the United States which are not coeducational or do not admit women, and 294 and 47 respectively in Canada. An average of fourteen women students were enrolled in the seventy-six coeducational institutions in the United States and Canada. There was an average of four graduates from sixty-two schools.

PART-TIME, GRADUATE AND SPECIAL STUDENTS

In fifty-one medical schools of the United States and three in Canada there were, in addition to the regularly enrolled students, 1,175 part-time, special and graduate students pursuing medical subjects. This group consists of 216 part-time, 288 special and 671 graduate students.

The part-time students were enrolled in thirty schools; the greatest number (forty-two) were enrolled at the University of Minnesota Medical School. Twenty-three were at the University of Southern California School of Medicine; the medical schools of the Universities of Arkansas, Kansas, Wayne and St. Louis University had between ten and seventeen, while the remainder had less than eight.

Of the special students, the greatest number (eighty-three) were at Northwestern University Medical School; at the School of Medicine of the Division of Biological

TABLE 10.—*Distribution by Sex*

School	Students		Graduates	
	Men	Women	Men	Women
University of Alabama	84	3	...	..
University of Arkansas	250	8	59	2
University of California	213	34	37	10
College of Medical Evangelists	201	30	72	8
University of Southern California	179	8	44	2
Stanford University	228	10	48	5
University of Colorado	192	15	46	2
Yale University	172	16	41	6
Georgetown University	407	..	117	..
George Washington University	231	22	55	4
Howard University	129	6	34	1
Emory University	230	..	55	..
University of Georgia	136	7	33	..
Loyola University	465	15	99	7
Northwestern University	544	18	138	1
Rush Medical College	312	12	280	9
Division of Biological Sciences	265	29	56	14
University of Illinois	499	37	135	2
Indiana University	410	15	94	3
State University of Iowa	308	14	76	4
University of Kansas	271	19	63	4
University of Louisville	332	9	85	4
Louisiana State University	263	18	41	2
Tulane University	453	13	112	1
Johns Hopkins University	247	27	58	5
University of Maryland	383	10	111	3
Boston University	197	18	53	3
Harvard University	536	..	139	..
Tufts College	250	21	58	9
University of Michigan	431	37	89	6
Wayne University	266	13	81	4
University of Minnesota	472	20	121	4
University of Mississippi	70	..	....	..
University of Missouri	74	1	....	..
St. Louis University	484	..	122	..
Washington University	328	19	91	3
Creighton University	255	9	58	1
University of Nebraska	328	8	85	2
Dartmouth Medical School	42	..	....	..
Albany Medical College	91	9	20	1
Long Island College	348	16	78	3
University of Buffalo	272	9	54	4
Columbia University	364	36	86	8
Cornell University	364	32	64	7
New York Medical College	274	14	84	5
New York University	473	41	136	3
University of Rochester	158	8	34	1
Syracuse University	167	6	40	..
University of North Carolina	61	7	....	..
Duke University	235	8	55	..
Wake Forest College	48	1	....	..
University of North Dakota	50	3	....	..
University of Cincinnati	278	18	67	2
Western Reserve University	246	14	59	2
Ohio State University	337	15	93	1
University of Oklahoma	227	12	54	5
University of Oregon	226	14	54	3
Hahnemann Medical College	544	..	121	..
Jefferson Medical College	518	..	138	..
Temple University	424	23	112	4
University of Pennsylvania	482	17	129	3
Woman's Medical College	....	107	....	23
University of Pittsburgh	217	12	59	3
Medical College of South Carolina	166	8	43	2
University of South Dakota	43	..	....	..
University of Tennessee	404	19	97	5
Meharry Medical College	190	10	34	1
Vanderbilt University	186	11	48	3
Baylor University	325	13	78	..
University of Texas	341	26	73	4
University of Utah	57	2	....	..
University of Vermont	157	7	48	2
University of Virginia	241	6	59	2
Medical College of Virginia	279	28	78	4
West Virginia University	39	2	....	..
University of Wisconsin	285	15	42	5
Marquette University	308	3	64	..
University of Alberta	195	10	29	3
University of Manitoba	200	14	47	5
Dalhousie University	175	3	27	1
Queen's University	204	..	47	..
University of Western Ontario	214	12	42	4
University of Toronto	764	50	100	9
McGill University	471	12	102	1
University of Montreal	179	2	51	..
Laval University	269	2	40	..
University of Saskatchewan	44	6	....	..
Totals	23,787	1,244	5,624	261

Sciences of the University of Chicago there were forty-five, and at the University of Toronto Faculty of Medicine twenty-four. The 288 special students represented thirty-three schools. Twenty of these schools had no part-time matriculants.

Students pursuing subjects leading to higher degrees were studying in twenty-seven schools. Altogether there were 671 such, of whom more than sixty were studying in each of six schools, the greatest number (ninety) having been enrolled at the University of Illinois College of Medicine.

TABLE 11.—*Part-Time, Special and Graduate Students in Medical Schools, 1936-1937*

School	Part-Time Students	Special Students	Graduate Students
University of Alabama	7	..	2
University of Arkansas	11	4	..
University of California	2	2	..
University of Southern California	23	16	7
Stanford University	1	..	..
University of Colorado	..	..	35
Georgetown University	..	1	..
Howard University	3	..	..
Emory University	3	..	..
University of Georgia	6	..	..
Division of Biological Sciences	..	45	..
Loyola University	3	..	10
Northwestern University	..	83	85
Rush Medical College	..	3	6
University of Illinois	..	19	90
Indiana University	1	1	1
State University of Iowa	6	..	16
University of Kansas	10	5	12
University of Louisville	..	1	..
Louisiana State University	5	..	..
Johns Hopkins University	8	9	14
University of Maryland	..	6	..
Boston University	8	1	..
Tufts College	..	1	..
University of Michigan	6	3	1
Wayne University	16	..	6
University of Minnesota	42	3	..
St. Louis University	17	..	..
Washington University	..	1	67
Creighton University	..	4	..
University of Nebraska	1	..	9
University of Buffalo	7	7	10
Cornell University	..	4	9
Columbia University	..	..	78
New York University	6	8	81
University of North Carolina	..	..	2
University of North Dakota	1	..	..
Duke University	..	2	..
University of Cincinnati	..	1	63
Western Reserve University	..	1	..
University of Oklahoma	2	..	..
University of Oregon	..	7	14
Woman's Medical College	..	..	1
University of Pittsburgh	3	5	..
Medical College of South Carolina	..	1	..
University of South Dakota	1	..	..
University of Tennessee	..	6	5
Vanderbilt University	4	..	5
University of Texas	..	5	..
University of Utah	4	..	..
Marquette University	3	..	..
University of Manitoba	..	2	9
University of Western Ontario	..	3	..
University of Toronto	6	24	33
Totals	216	288	671

The following schools matriculated these three types of students: Universities of Southern California, Indiana, Kansas, Johns Hopkins, Michigan, Buffalo, New York University and Toronto.

Among Canadian schools only six part-time, twenty-nine special and forty-two graduate students were enrolled.

These data will be found in table 11.

GRADUATES WITH BACCALAUREATE DEGREES

From the figures contained in table 12, it can be noted that 3,863 of the 5,885 graduates of medical schools during 1936-1937 also hold baccalaureate degrees. Figures are not readily available to show how many of these graduates obtained their degrees subsequent to beginning the medical course. Only four schools in the United States required a degree for admission for the session 1936-1937, one required four years, thirty-six required three years, three schools admitted students with three years of college work provided the

TABLE 12.—*Graduates with Baccalaureate Degrees*

	Number of Graduates	Number Holding Degrees
University of Arkansas	61	16
University of California	47	46
College of Medical Evangelists	80	32
University of Southern California	46	41
Stanford University	53	53
University of Colorado	48	28
Yale University	47	45
Georgetown University	117	80
George Washington University	59	34
Howard University	35	23
Emory University	55	26
University of Georgia	33	7
Loyola University	106	78
Northwestern University	139	98
Rush Medical College	280	271
Division of Biological Sciences	70	65
University of Illinois	137	34
Indiana University	97	21
State University of Iowa	80	24
University of Kansas	69	39
University of Louisville	80	67
Louisiana State University	43	16
Tulane University of Louisiana	113	5
Johns Hopkins University	63	63
University of Maryland	114	75
Boston University	56	54
Harvard University	139	123
Tufts College	117	99
University of Michigan	95	75
Wayne University	85	85
University of Minnesota	125	60*
St. Louis University	122	48
Washington University	94	82
Creighton University	59	21
University of Nebraska	87	31
Albany Medical College	21	21
Long Island College of Medicine	81	69
University of Buffalo	58	19
Columbia University	94	92
Cornell University	71	71
New York Medical College	89	70
New York University	139	139
University of Rochester	35	33
Syracuse University	40	28
Duke University	55	27
University of Cincinnati	99	10
Western Reserve University	61	61
Ohio State University	94	73
University of Oklahoma	59	29
University of Oregon	53	53
Hahnemann Medical College	121	70
Jefferson Medical College of Philadelphia	138	138
Temple University	136	85
University of Pennsylvania	124	124
Woman's Medical College of Pennsylvania	23	16
University of Pittsburgh	62	55
Medical Coll. of the State of South Carolina	45	37
University of Tennessee	102	44
Meharry Medical College	35	31
Vanderbilt University	51	51
Baylor University	78	36
University of Texas	79	44
University of Vermont	50	37
University of Virginia	61	28
Medical College of Virginia	82	28
University of Wisconsin	48	25
Marquette University	64	19
University of Alberta	32	8
University of Manitoba	52	12
Dalhousie University	28	16
Queen's University	47	1
University of Western Ontario	46	13
University of Toronto	109	29
McGill University	101	79
University of Montreal	51	44
Laval University	40	39
Totals	5,885	3,863

* Estimated figure.

V 10
1937

baccalaureate degree would be conferred in absentia at the end of the first year in medicine, thirty-two exacted the two year requirement and one the equivalent of two and a half years. Twenty-five schools offer a B.S. in medicine degree at some time during the medical course—five at the end of the first year, sixteen after two years in medicine, and two each after three and four years respectively. All the graduates of Stanford, Johns Hopkins, Wayne, Albany, Cornell, New York University, Western Reserve, Oregon, Jefferson and Vanderbilt held baccalaureate degrees. Three of these schools —Stanford, Wayne and Oregon—do not have a degree requisite.

SCHOOLS, STUDENTS AND GRADUATES IN THE UNITED STATES, 1905-1937

The number of medical schools, students and graduates in the United States for each five year period from 1905 to 1920, and for each year since is shown in table 13. The total number of undergraduate medical students for the college session 1936-1937 was 22,095, a decrease of 469 from the preceding session. In 1905 in the 160 schools then existing there were 26,147 students. This tabulation includes data for only those taking medical courses leading to the M.D. degree. They do not include part-time and special students even though their work may later be accepted for the M.D. degree, since at the time they are reported as part-time and special students and not candidates for a medical degree. Omitted from these figures also are university graduate students majoring in the medical school but not candidates for the M.D. degree. In the ten years from 1910 to 1920 there was a steady decrease in the

TABLE 13.—*Schools, Students and Graduates in the United States—1905-1937*

Year	No. Schools	Students*	Graduates
1905	160	26,147	5,606
1910	131	21,526	4,440
1915	96	14,891	3,356
1920	85	13,708	3,047
1921	83	14,466	3,186
1922	81	15,655	2,739
1923	80	16,940	3,120
1924	79	17,728	3,362
1925	80	18,250	3,974
1926	79	18,840	3,962
1927	80	19,662	4,035
1928	80	20,545	4,262
1929	76	20,858	4,146
1930	76	21,597	4,565
1931	76	21,982	4,735
1932	76	22,135	4,936
1933	77	22,466	4,895
1934	77	22,769	5,035
1935	77	22,888	5,101
1936	77	22,564	5,183
1937	77	22,095	5,377

* Includes figures for schools offering preclinical courses.

enrolment, while from 1921 to 1935 there was a continuous increase. In 1936 the enrolment decreased by 324 from the preceding year and in 1937 it dropped 469. Two years ago the Council issued a warning against the admission of larger classes than can be accommodated or than can reasonably be expected to satisfy approved scholastic standards. Many of the schools heeded this declaration and decreased their freshmen enrolment in the interest of better medical education and others are planning to do so in the future.

Again referring to table 13, it will be noted that the total number of graduates was 5,377, an increase of 194 over the year 1936. With the exception of the slight decrease in the number of graduates in 1933, as compared with the previous years, there has been a steady increase since 1926. There were marked increases in 1923, 1924 and 1925. In the seventy-seven recognized medical schools in the United States during 1936-1937 there were 22,095 students, including those having an incomplete course, and 5,377 graduates.

STUDENTS BY CLASSES—1930-1937

The total number of students in the various classes of the medical schools in the United States for each session from 1930-1931 to 1936-1937 inclusive is shown in table 14. The total attendance for the first year for the session 1936-1937 was 5,910, ninety-five fewer than the number enrolled for the session 1935-1936. Since the session 1933-1934, when there were 6,457

TABLE 14.—*Students in the United States Shown by Classes—1930-1937*

	1st Year	2d Year	3d Year	4th Year	5th Year‡	Total
1930-1931	6,456	5,538	5,080	4,908	1,025	23,007
1931-1932	6,360*	5,462*	4,932*	4,885*	1,067	23,302
1932-1933	6,436*	5,470*	5,017*	4,948*	1,106	23,572
1933-1934	6,457†	5,571†	4,988†	4,937†	1,182	23,982
1934-1935	6,356†	5,624†	5,142†	4,905†	1,233	24,121
1935-1936	6,005†	5,458†	5,230†	5,029†	1,213	23,777
1936-1937	5,910*	5,269*	5,140*	5,158*	1,255	23,350

* Enrolment for the two medical schools of the University of Chicago not included.
† Enrolment for the two medical schools of the University of Chicago and Duke University not included.
‡ Intern year.

enrolled, there has been a reduction in this class of 547. The total attendance for 1936-1937 for the remainder of the classes was respectively 5,269, 5,140, 5,158 and 1,255, a total of 23,350. The two medical schools of the University of Chicago are not operated under the promotion by class system but on an individual plan. It is not possible for the schools to report their students in this manner and accordingly they are not included in the figures by classes; but their enrolment is included in the total. At the School of Medicine of the Division of Biological Sciences of the University of Chicago there were 294 students enrolled and 324 at Rush Medical College, a total of 618. There were 427 fewer students enrolled than in 1935-1936, 771 fewer than 1934-1935, but 343 more than were enrolled in 1930-1931. The sophomore enrolment decreased 189 and the junior enrolment ninety, but there was an increase of 138 in the senior enrolment as well as in the fifth or intern year students (forty-two). These figures are exclusive of the figures for the two schools referred to.

The Association of American Medical Colleges [3] reports that there were 35,439 applications for admission to the 1936 freshman class, representing 12,192 applicants, and of these 6,465 were accepted and 5,727 rejected. However, the actual freshman enrolment was 5,910 exclusive of the two Chicago schools. It will be noted that, including the new matriculants of the University of Chicago, 649 were accepted by medical schools who did not enroll either because of multiple application or did not remain in medical school a sufficient length of time to be reported at the end of the year as having been members of the class.

NEGRO STUDENTS AND GRADUATES

The Negro medical students for the session 1936-1937 enrolled in the United States and Canada are recorded by classes in table 15. Totals for the college session 1935-1936 are shown for comparison. There were 372

3. J. A. Am. Coll. **12**: 194 (July) 1937.

such students and eighty-four graduates, an increase of three and eleven, respectively. The only medical school strictly for Negro youth, Meharry Medical College, matriculated 200 students and had thirty-five graduates. At Howard University College of Medicine they comprise a majority of those in attendance, and for this session 126 students of the class of 135 and the thirty-five graduates were Negroes. These two schools graduated the majority of the Negro students. All other schools (eleven) graduated a total of fourteen. In twenty schools in the United States, exclusive of Meharry and Howard, forty students were enrolled. There were six Negro students in three Canadian schools and in one there were two graduates. The enrolment by classes in all schools was first year 130, second year 88, third year 70 and fourth year 82, a total of 372. In 1935-1936 corresponding figures were 107, 98, 84 and 78, a total of 369. The freshman enrolment increased twenty-three, the sophomore class decreased ten, the junior class decreased fourteen and the senior class increased four.

TABLE 15.—*Negro Students and Graduates*

School	Enrolment by Classes During 1936-1937					
	1st Year	2d Year	3d Year	4th Year	Graduates	Totals
College of Medical Evangelists	..	..	2	2	4	1
Howard University College of Medicine	40	33	30	33	126	35
Loyola University School of Medicine	..	..	1	..	1	..
University of Chicago, Div. of Biological Sciences	..	1	..	1	2	2
University of Illinois College of Medicine	..	1	1	1	3	1
Indiana University School of Medicine	1	..	1	1	3	1
University of Kansas School of Medicine	1	..	..	..	1	..
Boston University School of Medicine	..	1	..	..	1	..
Tufts College Medical School	1	..	..	1	2	1
Wayne University College of Medicine	2	2	1	..	5	..
University of Michigan Medical School	2	..	..	1	3	1
University of Nebraska College of Medicine	..	1	..	..	1	..
Dartmouth Medical School	1	..	..	..	1	..
Columbia Univ. College of Phys. and Surgs.	1	..	..	..	1	..
New York Medical College	..	..	..	1	1	1
New York University	1	..	..	..	1	..
Western Reserve Univ. School of Medicine	..	1	..	..	1	..
Ohio State Univ. College of Medicine	..	1	1	2	4	2
Temple University School of Medicine	1	..	..	1	2	1
University of Pennsylvania School of Medicine	..	..	1	1	2	1
Woman's Medical College of Pennsylvania	..	..	1	..	1	..
Meharry Medical College	78	46	41	35	200	35
University of Toronto Faculty of Medicine	..	1	..	..	1	..
McGill University Faculty of Medicine	1	..	..	1	4*	2
University of Montreal Faculty of Medicine	..	..	..	1	1	..
Totals	130	88	70	82	372	84
Totals during 1935-1936	107	98	84	78	369	73

* Includes fifth year enrolment of two.

FEES

In table 16 the eighty-seven medical schools of the United States and Canada have been grouped according to the tuition fees charged. To arrive at the figures listed, an average was computed of the resident fees for each school. Included in these fees are the various minor charges, such as for matriculation, breakage, diploma and graduation. Four schools have fees of less than $100. These were Louisiana State University, University of North Dakota, University of Oklahoma and the University of Texas. The eleven schools having fees over $500 are Yale, George Washington, Johns Hopkins, Columbia, Cornell, Long Island, New York Medical College, New York University, Syracuse, Buffalo and Pennsylvania. Thirty schools in the United States and three in Canada made an additional charge for nonresidents ranging from $50 by the Universities of Mississippi, Missouri, Cincinnati (nonresidents of Cincinnati) and Virginia to $300 exacted by the University of California and Louisiana State University.

Fees charged for the session 1936-1937 as compared with the session 1935-1936 remained the same with one exception; i. e., a school in the $100 to $200 group was raised to the $200 to $300 group.

TABLE 16.—*Fees, 1936-1937—United States and Canada* *

	Schools
Under $100	4
$100 to 200	9
200 to 300	27
300 to 400	15
400 to 500	21
500 or over	11
Total	87

* Based on fees charged resident students.

The lowest nonresident fee was charged by the University of Kansas ($42 for the first year, $60 for the second year and $87 for the third and fourth years). Thirteen schools have a nonresident fee of $100 or less, fourteen schools between $100 and $200, and six schools between $200 and $300. The data and text regarding table 4 listing the number of residents and nonresidents and the definition of the term resident may be of interest in connection with the fees charged nonresidents. The fees are not listed in these statistics by individual schools other than in the descriptions beginning on page 676.

The average resident fee charged all schools was $334.

AVERAGE AGE OF GRADUATES—1937

In table 17 is shown the average age of the students graduating this year from each of the four year medical schools in the United States, and those schools offering a five year course, the fifth year of which is an internship. The average age of the 5,377 graduates was found to be 26.5 years. The school with the highest average (twenty-nine) was Meharry Medical College, three schools had an average of twenty-eight or more but less than twenty-nine, for fifteen schools the average was twenty-seven or twenty-seven and some tenth, twenty-seven had a score of twenty-six years or more but less than twenty-seven, and twenty-one schools ranked below twenty-six, the lowest of which was 24.9 years. One might suppose that the premedical requirement is a factor in the age variance, but in reality, as shown in table 12, 3,622 of these graduates had baccalaureate degrees most of which were obtained before entering medical school. At the bottom of the table are included the total number of graduates at each age, ranging from one who graduated at twenty-one years to 114 at thirty-five years or over.

Twenty-two and four tenths of all graduates attained the age of 25; the next highest figure, 1,161, 21.6 per cent, was 26 years. Six per cent graduated at 22 years and nine per cent at 34 years.

The averages in comparison with investigations made in previous years are given as follows:

1916	26.5
1922	26.8
1925	26.8
1928	26.8
1937	26.5

As will be noted, there has been very little difference in the average age over a period of twenty-one years,

V 10
1937

and the age of the majority of graduates can safely be estimated at from 25 to 27 years.

CITIZENS OF THE UNITED STATES ENROLLED IN FACULTIES OF MEDICINE ABROAD

A study of the number of citizens of the United States pursuing medical courses in faculties of medicine abroad has been carried on by the Council since 1931, when it became evident that great numbers were going to Europe to study. Table 18 lists the institutions in which such students are enrolled. This tabulation covers the academic year 1936-1937. In a few cases because figures were not available it was necessary to reproduce figures from previous sessions for several schools known to have citizens of the United States enrolled. Including these figures, there were 1,648 students and 509 graduates or those who completed their training in ninety-five institutions—eighty-nine schools in seven-

TABLE 17.—*Average Age of Graduates—1937*

School	Years															Number of Grads.	Average Age
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35 or Over		
University of Arkansas	..	1	6	9	8	4	8	7	2	5	4	2	1	2	6	61	27
College of Medical Evangelists*	..	..	..	1	12	12	14	6	9	7	6	3	1	3	6	80	28.5
Stanford University*	..	..	..	2	5	11	8	7	3	6	5	2	1	1	2	53	28
University of California*	..	..	..	1	8	11	9	8	1	4	2	..	..	1	2	47	27
University of Southern California*	..	..	..	2	2	12	11	7	4	3	2	1	..	1	1	46	27.6
University of Colorado	..	..	..	7	10	6	7	2	3	6	1	1	1	1	3	48	27.5
Yale University	..	..	1	2	9	14	13	4	1	1	..	..	1	..	1	47	26.5
George Washington University	1	4	7	13	10	6	4	3	3	1	4	1	..	..	2	59	26.7
Georgetown University	..	..	..	15	22	20	23	12	5	3	2	1	2	1	1	117	26.5
Howard University	..	..	1	1	5	6	6	6	1	3	1	..	..	3	2	35	28
Emory University	..	1	6	13	14	6	8	3	1	..	1	1	..	1	..	55	25.5
University of Georgia	..	3	2	7	7	6	3	..	1	2	2	..	..	..	..	33	25.5
Loyola University*	..	..	1	6	22	21	18	9	14	5	3	2	1	..	4	106	27
Northwestern University*	..	..	..	5	16	37	44	13	8	3	6	2	..	3	2	139	27
Rush Medical College**	..	..	8	27	59	64	46	27	19	7	12	9	2	2	7	289	26.8
Division of Biological Sciences**	..	..	3	10	18	12	8	4	4	5	2	1	..	1	2	70	26.6
University of Illinois*	..	..	..	14	31	24	22	18	9	5	4	2	4	..	4	137	27
Indiana University	..	3	12	20	24	11	9	5	2	4	1	1	..	2	3	97	25.8
State University of Iowa	..	..	8	17	17	19	7	5	3	1	..	..	2	1	..	80	25.7
University of Kansas	..	1	5	4	18	12	9	6	3	2	1	1	..	..	7	69	26.9
University of Louisville	..	..	1	12	20	15	14	15	2	..	2	3	2	..	4	89	26.8
Louisiana State University*	..	..	3	3	7	8	8	3	2	3	1	2	..	1	2	43	27
Tulane University	..	4	9	31	22	19	11	6	4	3	2	1	..	..	1	113	25.5
Johns Hopkins University*	..	..	1	11	22	16	5	1	2	2	3	..	..	..	..	63	25.8
University of Maryland	..	1	12	20	27	20	15	6	2	8	1	..	..	1	1	114	25.8
Boston University	..	..	1	4	13	20	9	2	2	1	1	1	1	..	1	56	26
Harvard University	..	..	4	13	43	38	19	12	3	3	3	..	1	..	..	139	26
Tufts College Medical School	..	..	..	7	20	36	22	7	9	5	2	4	..	1	4	117	27
University of Michigan	..	..	7	17	27	17	9	5	7	2	2	..	..	..	2	95	25.9
Wayne University*	..	..	1	2	11	22	13	7	8	11	2	3	2	1	2	85	27.7
University of Minnesota*	..	..	1	8	27	26	25	15	2	8	6	3	..	2	2	125	27
St. Louis University	..	..	10	21	20	26	18	12	1	7	2	1	2	1	1	122	26
Washington University	..	.	1	9	23	28	15	4	3	3	3	..	1	1	3	94	26.6
Creighton University	..	..	3	9	15	9	6	6	3	3	2	1	..	1	1	59	26.6
University of Nebraska	..	..	5	18	23	15	8	7	2	2	3	2	1	..	1	87	26
Albany Medical College	..	..	..	2	7	6	4	1	1	..	..	..	..	..	..	21	25.9
Columbia University	..	..	4	14	17	22	17	7	3	3	..	1	1	1	..	91	26
Cornell University	..	2	13	19	18	11	..	1	1	..	2	1	..	..	2	71	26
Long Island College of Medicine	..	2	3	12	24	19	10	3	2	2	2	1	..	1	..	81	25.8
New York Medical College	..	1	2	9	26	24	6	9	4	4	1	..	1	1	1	89	26
New York University	..	..	21	38	34	31	7	4	..	..	..	..	..	1	1	139	24.9
Syracuse University	..	..	1	8	7	10	8	5	..	..	1	..	..	..	..	40	25.9
University of Buffalo	..	..	6	15	15	5	4	6	2	1	..	1	..	..	3	58	25.9
University of Rochester	..	..	..	3	7	9	11	1	3	1	..	..	..	..	..	35	26
Duke University*	..	1	7	7	13	10	7	2	3	3	..	..	..	1	1	55	25.9
Ohio State University	..	..	1	9	30	20	12	6	4	2	4	..	3	2	1	94	26.6
University of Cincinnati*	..	..	1	6	13	14	13	7	5	5	1	..	1	1	2	69	27
Western Reserve University	..	..	1	9	19	16	7	4	4	1	..	..	..	..	..	61	25.8
University of Oklahoma	..	1	2	11	9	9	6	5	2	2	4	1	1	1	3	59	27
University of Oregon	..	..	..	7	9	11	9	5	3	3	1	1	1	1	2	53	27
Hahnemann Medical College	..	..	10	8	26	37	19	7	4	3	4	..	1	..	2	121	26
Jefferson Medical College	..	..	2	13	35	35	15	8	2	2	3	2	1	..	..	128	26
Temple University	..	..	4	8	35	28	16	13	3	4	3	..	1	..	1	116	26
University of Pennsylvania	..	1	3	22	36	39	14	6	5	3	2	..	1	..	2	134	25.9
University of Pittsburgh	..	..	6	19	22	7	2	3	1	..	..	1	..	..	1	62	25
Woman's Medical College	..	2	5	1	2	6	2	1	3	..	..	..	1	..	..	23	25.6
Medical College of South Carolina	..	2	..	4	8	10	11	7	2	..	..	..	..	1	..	45	26
Meharry Medical College	..	..	..	2	2	3	3	5	5	1	5	2	3	2	2	55	29
University of Tennessee	1	6	16	17	20	19	6	5	2	2	4	1	1	2	..	102	25
Vanderbilt University	..	..	..	8	13	12	7	5	1	..	2	1	1	..	1	51	26
Baylor University	..	1	6	18	13	10	9	3	8	3	3	..	1	..	3	78	26
University of Texas	..	..	4	20	22	14	9	4	1	3	1	..	..	..	1	79	25.6
University of Vermont	..	..	2	6	12	12	2	5	1	1	4	..	..	3	2	50	27
Medical College of Virginia	..	1	5	14	17	19	9	5	3	2	1	3	..	..	3	82	26
University of Virginia	..	..	2	19	18	10	4	..	3	1	2	1	..	..	1	61	25.6
University of Wisconsin	..	..	1	6	19	7	10	10	2	..	4	1	2	1	1	64	26.9
Marquette University*	..	..	1	10	13	6	7	6	..	1	1	3	..	..	..	48	26
Total number of graduates at each age	1	34	236	713	1,302	1,161	752	419	233	192	144	76	49	51	114	5,377	
Percentage of graduates at each age	0.02	0.6	4.4	13.3	22.4	21.6	14.0	7.8	4.3	3.6	2.7	1.4	0.9	0.9	2.1		
Average age at graduation	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	26.5

* Internship required for graduation.
** Internship requirement discontinued in 1936, but required of more than half of 1937 graduates.

teen European countries, two in two South American countries and four in three countries of Asia. The files of the Association of American Medical Colleges indicate that the application record of many of these students show that they have made application to medical schools in the United States without success. A study is also being carried on of the license record of foreign physicians.[4]

credentials, which are equivalent to licensure in this country. In 1936, 237 were so registered. While this table makes no differentiation between United States citizens and those foreign born, it can be assumed that the increasing number of those seeking licensure represent to a great extent United States students who migrated to European and other countries. In 1933 the Federation of State Medical Boards adopted a resolu-

TABLE 18.—*Citizens of the United States Enrolled in Faculties of Medicine Abroad—1936-1937*

	Totals		Students, Academic Year 1936-1937	
			Enrolled	Completed Course
Argentina	**2**	**0**		
Universidad Nacional de La Plata			2*	0*
Austria	**185**	**54**		
Karl-Franzens-Universität, Graz			9	5
Leopold-Franzens-Universität, Innsbruck			10*	7*
Medizinische Fakultät der Universität Wien			166*	42*
Belgium	**13**	**1**		
Université Libre de Bruxelles			11*	1*
Université Catholique de Louvain			2*	0
Brazil	**2**	**0**		
Faculdade de Medicina do Parana, Curitiba			2	0
China	**18**	**1**		
Peiping Union Medical College, Peiping			5	0
Pennsylvania Medical School, Shanghai			13	1
Czechoslovakia	**13**	**4**		
Univerzita Komenskeho, Bratislava			4	2
Deutsche Universität, Prague			2	2
Universita Karlova, Praha			7	0
England	**47**	**17**		
University of Birmingham			1	1
University of Bristol			5	1
University of Durham, Newcastle-upon-Tyne			3	1
University of Liverpool			1	1
University of London				
Charing Cross Hospital Medical School			5	2
Guy's Hospital Medical School			1	0
King's College Hospital Medical School			2	2
London Hospital Medical College			1	1
London (Royal Free Hospital) School of Medicine for Women			1	0
Middlesex Hospital Medical School			1	1
St. Bartholomew's Hospital Medical College			12	1
St. Mary's Hospital Medical School			3	2
University College Hospital Medical School			1	1
University of Oxford			2	0
University of Sheffield			8	3
Estonia	**1**	**0**		
Université de Tartu			1	0
France	**40**	**14**		
Université de Lyon			4*	1*
Université de Montpellier			3	1
Université de Nancy			2	0
Université de Paris			29	11
Université de Strasbourg			2	1
Germany	**360**	**122**		
Friedrich-Wilhelm-Universität, Berlin			56*	13*
Rheinische Friedrich-Wilhelms-Universität, Bonn			18	1
Schlesische Friedrich-Wilhelms-Universität, Breslau			1	0
Medizinische Akademie Düsseldorf			3*	0*
Friedrich-Alexanders-Universität, Erlangen			1	0
Johann Wolfgang Goethe-Universität, Frankfurt-am-Main			4	2
Albert-Ludwigs-Universität, Freiburg			69	69
Georg August-Universität, Göttingen			2	0
Vereinigten Friedrich-Universität, Halle-Wittenberg			3*	0*
Hamburgische Universität			15	13
Universität Heidelberg			16	6
Thüringische Landesuniversität, Jena			1	0
Christian-Albrechts-Universität, Kiel			1	0
Universität Köln			5	0
Universität Leipzig			31**	7**
Philipps-Universität, Marburg			1	1
Ludwig-Maximilians-Universität, München			31	14
Universität Rostock			2	0
Eberhard-Karls-Universität, Tübingen			1	0
Julius-Maximilians-Universität, Würzburg			3	0
Greece	**18**	**0**		
National University of Athens			18	0
Hungary	**27**	**4**		
Magyar Királyi Pázmány Petrus Tudományegyetem, Budapest			16	4
Magyar Királyi Tisza-István Tudományegyetem, Debreen			4	0
Magyar Királyi Erzsébet Tudományegyetem, Pecs			4	0
Magyar Királyi Ferenez József Tudományegyetem, Szeged			3	0
Ireland	**7**	**2**		
Queen's University, Belfast			1	0
National University of Ireland, University College, Dublin			2	2
Schools of Surgery, Royal College of Surgeons in Ireland, Dublin			1	0
University of Dublin School of Physic, Trinity College, Dublin			3	0
Italy	**264**	**86**		
Regia Università di Bologna			29*	18*
Regia Università di Firenze			4*	0*
Regia Università di Genova			2*	1*
Regia Università di Messina			6**	0**
Regia Università di Modena			2	0
Regia Università di Napoli			83**	4**
Regia Università di Padova			4	2
Regia Università di Pavia			1	0
Regia Università di Perugia			3	3
Regia Università di Pisa			2	0
Regia Università di Roma			128*	38*
Lithuania	**5**	**1**		
Vytauto Didžiojo Universiteto, Kaunas			5	1
Netherlands Indies	**2**	**0**		
Geneeskundige Hoogeschool, Batavia-Centrum			2	0
Poland	**14**	**0**		
Uniwersytet Cracow			2	0
Uniwersytet Poznański			4	0
Uniwersytet Józefa Piłsudskiego, Warszawa			3	0
Uniwersytet Stefana Batorego, Wilno			5	0
Scotland	**386**	**89**		
University of Aberdeen			2*	1*
School of Medicine of the Royal Colleges, Edinburgh			227	33
University of Edinburgh			23	10
Anderson College of Medicine, Glasgow			38	15
St. Mungo's College, Glasgow			55***	0***
University of Glasgow			21	12
University of St. Andrews			20	9
Spain	**3**	**0**		
Universidad Central de España, Madrid			3	0
Switzerland	**316**	**143**		
Universität Basel			87	23
Universität Bern			81	43
Université de Genève			33	25
Université de Lausanne			63	19
Universität Zürich			53	33
Syria	**19**	**0**		
American University of Beirut			19	0
Yugoslavia	**6**	**0**		
Beogradskog Universiteta			5	0
Zagrebaskog Universiteta			1	0
Totals by countries	**1,643**	**509**		

* 1935-1936 figures. ** 1934-1935 figures. *** 1933-1934 figures.

Table 19, recording the number of graduates of foreign medical faculties (representing both American and foreign born physicians) examined by licensing boards in the United States in six years and the percentage failing, is of interest. In addition to the figures given, a number have been periodically licensed in New York without examination—by endorsement of their foreign

tion to the effect that no student matriculating in a European medical school subsequent to the academic year 1932-1933 will be admitted to any state medical licensing examination who does not present satisfactory evidence of premedical education equivalent to the requirements of the Association of American Medical Colleges and the Council on Medical Education and Hospitals, and graduation from a European medical

4. J. A. M. A. **108**: 1430 (April 24) 1937.

school after four academic years of attendance, and further submits evidence of having satisfactorily passed the examination to obtain a license to practice medicine in the country in which the medical school from which he is graduated is located. This policy of the federation has been made effective by individual action on the part of many of the state licensing bodies and the National Board of Medical Examiners.

TABLE 19.—*Graduates of Faculties of Medicine Abroad Examined—1930-1936*

Date	Number Examined	Passed	Percentage Failed
1930	167	92	44.9
1931	158	91	42.4
1932	182	96	47.3
1933	200	129	35.5
1934	285	170	40.2
1935	437	302	30.9
1936	588	380	35.4

The House of Delegates of the American Medical Association in 1936 endorsed a resolution urging that graduates of medical faculties of other countries be expected to prove their fitness for medical practice by being in possession of a license to practice in the country of their graduation and a certificate of internship in a hospital approved for such training or complete the fourth year in an American class A medical school. It is to be hoped that those being admitted to practice have such qualifications.

Further, hospitals in which these students seek internships in order to maintain approval by the Council may accept them on the successful completion of parts I and II of the examinations of the National Board of Medical Examiners, provided suitable graduates of American schools are not available.

The enrolment of students in foreign countries for each session since 1930-1931 is shown in table 20. The largest numbers were enrolled in Austria, Germany,

TABLE 20.—*Citizens of the United States Enrolled in Faculties of Medicine Abroad—1930-1937*

	1930-1931		1931-1932		1932-1933		1933-1934		1934-1935		1935-1936		1936-1937	
	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course
Argentina	...	..	...	..	...	..	...	..	...	..	2	0	2	0
Austria	114	3	175	6	221	3	253	9	235	6	183	45	185	54
Belgium	3	0	4	1	10	1	11	0	19	3	15	3	13	1
Brazil	...	..	...	..	...	..	3	1	1	0	1	0	2	0
China	...	..	...	..	12	0	15	0	18	1	19	1	18	1
Colombia	...	..	...	..	...	..	1	0	...	..	...	..	...	..
Czechoslovakia	2	0	4	0	19	0	7	0	10	0	11	3	13	4
Dominican Republic	...	..	...	..	...	..	...	..	1	0	...	..	...	..
England	52	2	61	4	57	1	69	4	78	20	60	30	47	17
Estonia	...	..	...	..	...	..	...	..	..	..	...	..	1	0
Finland	1	0	...	..	...	..	...	..	...	..	...	..	...	..
France	25	2	62	6	78	5	86	2	89	4	75	4	40	14
Germany	72	1	189	5	439	42	331	8	246	25	204	28	200	122
Greece	...	..	...	..	4	1	9	0	13	0	15	0	18	0
Hungary	9	1	15	2	13	1	25	1	23	0	12	0	27	4
Ireland	14	1	21	0	29	0	4	1	6	1	7	4	7	2
Italy	78	11	155	4	282	14	228	25	286	30	265	65	204	66
Japan	...	..	1	0	...	..	...	..	...	..	...	..	...	..
Lithuania	...	..	4	0	4	0	2	0	2	0	2	0	3	1
Mexico	1	0	1	1	...	..	...	..	...	..	...	..	...	..
Netherlands	...	..	...	..	...	..	1	0	...	..	...	..	...	..
Netherlands Indies	...	..	...	..	1	0	1	0	1	0	...	..	2	0
Philippine Islands	...	..	...	..	2	0	2	0	7	0	...	..	...	..
Poland	2	0	3	0	9	0	14	4	12	1	9	1	14	0
Portugal	...	..	...	..	...	..	1	0	1	0	...	..	...	..
Scotland	256	19	286	25	416	9	444	48	476	71	359	48	286	80
South Africa, Union of	...	..	1	0	...	..	...	..	...	..	...	..	...	..
Spain	...	..	...	..	...	..	...	..	...	..	...	..	3	0
Switzerland	65	4	214	1	405	10	251	8	390	54	366	98	316	143
Syria	16	2	8	0	7	0	11	2	13	2	15	3	19	0
Yugoslavia	...	..	2	1	5	1	7	0	11	0	7	0	6	0
Totals	710	46	1,296	56	2,654	88	1,595	113	1,944	218	1,637	333	1,648	509

Further, in 1934 the Federation of State Medical Boards passed a resolution recommending to its constituent boards that, until adequate information is available, these boards deny graduates of foreign medical schools admission to the licensure examination. The Federation's rulings have not been particularly effective. However, while over 600 secured licenses to practice medicine during 1936 in thirty states, 454 were registered in New York.

Several years ago the governments of many European countries sent representatives to this country to discuss appropriate measures for dealing with students from the United States. By the raising of entrance requirements, reduction in enrolment and careful scrutiny of credentials, the number studying abroad is gradually being reduced. Many are no longer accepting new students.

Italy, Scotland and Switzerland. The greatest number (227) in any one school was the enrolment in the School of Medicine of the Royal Colleges, Edinburgh, followed by the University of Vienna with 166 and the University of Rome with 128. Fifty-four schools had less than five students. Statistics presented in the State Board Number of THE JOURNAL [5] indicate that in a five year period 31.5 per cent of those examined who were graduates of the University of Vienna failed and the University of Rome had 53.6 per cent failures. Completion of the course at the School of Medicine of the Royal Colleges does not qualify the student for practice. He is required to be in possession of the certificate of one of the licensing corporations of Great Britain. It is not known what standing they might have before licensing boards in this country.

5. J. A. M. A. **108**: 1430 (April 24) 1937.

DESCRIPTION OF MEDICAL COLLEGES

ALABAMA

University (Tuscaloosa)

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE.—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868, inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1902, when all property was transferred to the University of Alabama. In 1920 clinical teaching was suspended and the medical school was removed to the university campus near Tuscaloosa. Coeducational since 1920. Minimum entrance requirements are ninety semester hours of collegiate work. The course of study covers two years of thirty-six weeks each. The faculty includes 15 professors and 12 instructors, assistants, etc., a total of 27. The tuition fees are $271 each year. Each class is limited to fifty students. The registration for 1936-1937 was 87. The next session begins Sept. 8, 1937, and ends May 24, 1938. The Dean is Stuart Graves, M.D.

ARKANSAS

Little Rock

UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE, 300 West Markham Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The faculty consists of 27 professors and 67 lecturers and assistants, total 94. The curriculum covers four years of nine months each. Entrance requirements are two years of collegiate work. The B. S. degree in medicine is conferred at the end of the second year. The fees for the four years for residents or Arkansas are $275; nonresidents are charged $200 additional each year. The registration for 1936-1937 was 298; graduates, 61. The next session begins Sept. 29, 1937, and ends June 7, 1938. The Dean is Frank Vinsonhaler, M.D.

CALIFORNIA

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley; Medical Center, San Francisco.—Organized in 1862 as the Toland Medical College. The first class graduated in 1864. In 1872 it became the Medical Department of the University of California. In 1909, by legislative enactment, the College of Medicine of the University of Southern California, at Los Angeles, became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged, and elective chairs in homeopathic materia medica, and therapeutics were provided. Coeducational since organization. Three years of collegiate work is required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The faculty is composed of 152 professors and 238 associates and assistants, a total of 390. The course covers four years of eight months each, and an additional fifth year consisting of an internship in a hospital or of special work in a department of the medical school. Fees for the four years, respectively, for residents of California are $277, $240, $235 and $235; nonresidents are charged $300 additional each year. The registration for 1936-1937 was 247; graduates, 47. The next session begins Aug. 23, 1937, and ends May 21, 1938. The Dean is Langley Porter, M.D., San Francisco.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda, the clinical departments at Los Angeles. Coeducational since organization. The faculty is composed of fifty professors and 269 associates, assistants and instructors, a total of 319. The course covers a period of five years, including one year of internship. During the second year the students are in school twelve months. This is accomplished by means of the "cooperative plan," the students spending alternate months in an approved hospital in practical lines of medical training. The first, third and fourth years each cover ten months of continuous school work. Sixty-four semester hours of collegiate work are required for admission. The total fees for the four years, respectively, are $470, $375, $470, and $480. The registration for 1936-1937 was 421; graduates, 80. The next session begins September 1, 1937 and ends June 12, 1938. The Dean is E. H. Risley, M.D., Loma Linda; and the Associate Dean is W. E. Macpherson, M.D., Los Angeles.

Los Angeles

UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF MEDICINE, 3551 University Avenue.—Organized in 1885 as the University of Southern California College of Medicine. First class graduated in 1888. In 1908 it became the Medical Department of the University of California in Los Angeles. In 1909 the College of Physicians and Surgeons, established in 1904, became the Medical Department of the University of Southern California. Its activities were suspended in 1920; reorganized in May 1928, under present title. The faculty consists of 139 professors and 139 instructors, assistants and others, a total of 278. An internship is required for graduation. Three years of collegiate work is required for admission. Coeducational since organization. Annual fees amount to $450. The registration for 1936-1937 was 187; graduates, 46. The next session begins Sept. 20, 1937 and ends June 4, 1938. The Dean is Paul S. McKibben, Ph.D.

San Francisco

STANFORD UNIVERSITY SCHOOL OF MEDICINE, 2398 Sacramento Street, San Francisco.—Organized in 1908, when, by agreement, the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. The faculty consists of 121 professors and 146 lecturers, assistants and others, a total of 267. Three years of collegiate work is required for admission. The course covers four years of eight and one-half months each, plus a fifth year of intern work. The fees for the four years, respectively, are $470, $446, $364 and $364. The registration for 1936-1937 was 238; graduates, 53. The next session begins Sept. 28, 1937 and ends June 15, 1938. The Dean is Loren Roscoe Chandler, M.D.

COLORADO

Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged, Jan. 1, 1911. Coeducational since organization. The faculty is composed of 57 professors and 130 lecturers, instructors and assistants, a total of 187. The course covers four years of nine months each. The entrance requirements are three years of collegiate work. The fees for residents of Colorado, for each of the four years are, respectively, $248, $243, $228, and $228. Nonresidents are charged $165 additional each year. The registration for 1936-1937 was 207; graduates, 48. The next session begins Sept. 27, 1937 and ends June 13, 1938. The Dean is Maurice H. Rees, M.D.

CONNECTICUT

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE, 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Coeducational since 1916. The faculty consists of 137 professors and 213 lecturers and assistants, a total of 350. The requirements for admission are three years of collegiate work. The course covers four years of nine months each. The fees for the four years, respectively, are $505, $500, $500 and $520. The registration for 1936-1937 was 188; graduates, 47. The next session begins Sept. 27, 1937 and ends June 15, 1938. The Dean is Stanhope Bayne-Jones, M.D.

DISTRICT OF COLUMBIA

Washington

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 3900 Reservoir Road, N.W.—Organized in 1851. First class graduated in 1852. The faculty is composed of 57 professors, 43 associate professors, 19 assistant professors and 118 instructors; total, 237. Required for admission, three years of collegiate work. The course of study covers four terms of eight and one-half months each. The present fees for each of the four sessions, respectively, are $500, $460, $410 and $450. The registration for 1936-1937 was 407; graduates, 117. The next session begins Sept. 20, 1937 and ends June 13, 1938. The Dean is David V. McCauley, S. J., Ph.D.

GEORGE WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, 1335 H Street, N.W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an Act of Congress, the title of George Washington University was granted to the institution. Coeducational since 1884. The faculty is composed of 53 professors and 117 instructors, demonstrators and assistants, a total of 172. Two years of collegiate work is required for admission. The course covers four years of thirty-two weeks each. The fees for the four years, respectively, are $550, $550, $500 and $500. The registration for 1936-1937 was 253; graduates, 59. The next session begins Sept. 22, 1937 and ends June 8, 1938. The Dean is Earl B. McKinley, M.D.

HOWARD UNIVERSITY COLLEGE OF MEDICINE, Fifth and W Streets, N.W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Coeducational since organization. Negro students compose a majority of those in attendance. The faculty comprises 33 professors and 81 lecturers and assistants, 114 in all. The admission requirements are at least two years of collegiate work. The course covers four years of thirty-three weeks each. The fees for each of the four sessions, respectively, are $269, $269, $259 and $266. Registration for 1936-1937 was 135; graduates, 35. The next session begins Sept. 27, 1937, and ends June 10, 1938. The Dean is Numa P. G. Adams, M.D.

GEORGIA

Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE, 50 Armstrong Street and Druid Hills.—Organized in 1854 as the Atlanta Medical College. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874.

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In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. Three years of collegiate work is required for admission. The faculty consists of 18 professors and 177 associates and assistants, a total of 195. The course of study is four years of thirty-two weeks each. The fees for each of the four years are $300. The registration for 1936-1937 was 220; graduates, 55. The next session begins Sept. 28, 1937, and ends June 6, 1938. The Dean is Russell H. Oppenheimer, M.D.

Augusta

UNIVERSITY OF GEORGIA SCHOOL OF MEDICINE, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia, the name being changed July 1, 1933, to the University of Georgia School of Medicine. Property transferred to university in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. The faculty includes 56 professors and 32 assistants, 88 in all. Three years of collegiate work is required for admission. The course is four years of thirty-four weeks each. The fees for each of the four years are $185 for residents of Georgia, and $365 each year for nonresidents. The registration for 1936-1937 was 143; graduates, 33. The next session begins Sept. 27, 1937, and ends June 13, 1938. The Dean is G. Lombard Kelly, M.D.

ILLINOIS

Chicago

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, 706 South Lincoln Street.—Incorporated in 1915 as the Bennett Medical College, and operated as an organic part of Loyola University, by virtue of an agreement entered into with the trustees of Bennett Medical College. Present title assumed in 1917. The Chicago College of Medicine and Surgery was purchased in 1917. The first class graduated in 1916. Coeducational. Two years of collegiate work is required for admission. The course of study is five years, including an internship. The B.S. degree in medicine is conferred at the end of the third year. The faculty is composed of 136 in professorial rank and 168 others, a total of 304. The fees for each year are $401, $437, $367 and $328, respectively. The enrolment for 1936-1937 was 480; graduates, 106. Next session begins Sept. 27, 1937, and ends June 11, 1938. The Dean is Louis D. Moorhead, M.D.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 303 East Chicago Avenue.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The faculty comprises 133 professors, 313 associates and instructors, a total of 446. The requirement for admission is three years of collegiate work. The B.S. degree in medicine may be conferred before the end of the senior year. The course covers four years of eight and one-half months each and a fifth year spent in an approved hospital as an intern or in other practical work. The total fees are $365 each year. The registration for 1936-1937 was 562; graduates, 139. The next session begins Sept. 28, 1937, and ends June 11, 1938. The Dean is Irving S. Cutter, M.D.

THE UNIVERSITY OF CHICAGO MEDICAL SCHOOLS.—The Medical Schools include (a) The School of Medicine of the Division of Biological Sciences and (b) Rush Medical College, both of which are organized within the Division of Biological Sciences. The first two years of the medical course for both are given in the School of Medicine of the Division of Biological Sciences and the last two years are given either in the School of Medicine of the Division of Biological Sciences or in Rush Medical College.

The School of Medicine of the Division of Biological Sciences, Fifty-Ninth Street and Ellis Avenue.—Organized in 1924. The work of the first two years of the medical course has been given on the Quadrangles since 1899, in cooperation with Rush Medical College, and that of the third and fourth clinical years has been given since 1924 with the organization of this medical school and the construction on the Quadrangles of the University hospitals and clinics. Coeducational. The faculty is composed of 98 professors, 132 associates, instructors and others, a total of 230. The requirements for admission are three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The curriculum covers twelve quarters of work. Students are admitted at the beginning of the autumn quarter. The tuition fee for each of the four years is $450. The registration for 1936-1937 was 294; graduates, 70. The next session begins Oct. 1, 1937, and ends June 10, 1938.

Rush Medical College, 1758 West Harrison Street.—Chartered in 1837; held first class in 1843. First class graduated in 1844. In 1887 the college became the medical department of Lake Forest University, retaining, however, its self-government. This relation was dissolved in April, 1898, and in the same month affiliation with the University of Chicago was established. Coeducational since 1898. In May, 1924, by a new contract, the University of Chicago took over the work of Rush Medical College as a department of the University. Thereafter only clinical work has been offered by Rush Medical College. The work of the first two years is given on the University Quadrangles. Three years of collegiate work are required for admission. The year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. The requirements for the degree consist of twelve full quarters of work. The faculty is composed of 134 professors, 163 associates, instructors and others, a total of 297. The tuition fee is $375 a year until 1938. Effective Autumn 1938 it will be increased to $450 for juniors and in Autumn 1939 for juniors and seniors. The registration for 1936-1937 was 324; graduates, 289. The next session begins Oct. 4, 1937, and ends June 10, 1938. The school is in session all year except the month of September.

All correspondence relating to general policies should be addressed to W. H. Taliaferro, Ph.D., Dean of the Division of Biological Sciences, or to A. C. Bachmeyer, M.D., Associate Dean of the Division; that relating to Rush Medical College should be addressed to Emmet B. Bay, M.D., Associate Dean of the Division of Biological Sciences (Rush Medical College); and that pertaining to student questions should be addressed to B. C. H. Harvey, M.D., Dean of Students.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, 1853 West Polk Street.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was canceled in June, 1912, and was restored in March, 1913, when the present title was assumed. Coeducational since 1898. Three years of collegiate work is required for admission. The curriculum covers four years of thirty-two weeks each, and a year of internship in an approved hospital. The B.S. degree in medicine is conferred at the end of the second year. The faculty is composed of 126 of professorial rank and 306 associates, instructors and assistants, a total of 432. The tuition is $150 a year for students who are residents of Illinois; $225 a year for nonresident students. The registration for 1936-1937 was 646; graduates, 137. The next session begins Sept. 27, 1937, and ends June 10, 1938. The Dean is David J. Davis, M.D.

INDIANA

Bloomington-Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. The faculty consists of 270 professors, lecturers, associates and assistants. Three years of collegiate work is required for admission. The B.S. degree in medicine is conferred. The work of the first year is given at Bloomington and the work of the next three years at Indianapolis. The regular fee for the medical course for all four years is $205 a year for residents of Indiana, and $410 for nonresidents. The registration for 1936-1937 was 425; graduates, 97. The next session begins Sept. 10, 1937, and ends June 13, 1938. The Dean at Bloomington is Burton D. Myers, M.D., and the Dean at Indianapolis is Willis D. Gatch, M.D.

IOWA

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. The faculty is made up of 46 professors, 63 lecturers, demonstrators and assistants, a total of 109. At present two years of collegiate work is required for admission, but beginning in September 1938 three years of collegiate studies will be required. The B.S. degree in the combined course of liberal arts and medicine is conferred. The course of study covers four years of thirty-four weeks each. The tuition fee is $196 each year for residents of Iowa and $460 for nonresidents. The registration for 1936-1937 was 382; graduates, 80. The next session begins Sept. 27, 1937, and ends June 6, 1938. The Dean is Ewen Murchison MacEwen, M.D.

KANSAS

Lawrence-Kansas City

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. Absorbed Kansas Medical College in 1923. First class graduated in 1906. The clinical courses are given at Kansas City. Coeducational since 1880. The faculty includes 59 professors and 129 instructors, assistants and others, a total of 188. The requirement for admission is two years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The course covers four years of nine months each. The total fees for residents of the state for each of the four years are, respectively, $143, $139, $155 and $157. For nonresidents the fees are $263, $319, $405 and $407. The registration for 1936-1937 was 290; graduates, 69. The next session begins Sept. 16, 1937, and ends June 6, 1938. The Dean is H. R. Wahl, M.D., Kansas City.

KENTUCKY

Louisville

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE, First and Chestnut Streets.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University

Medical Department; in 1908, the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Coeducational since organization. Two years of collegiate work is the minimum requirement for admission. The faculty numbers 68 professors and 95 assistants, instructors and others, a total of 163. Course covers four years of thirty-two weeks each, exclusive of vacations and examinations. Fees for four years are, respectively, $404, $404, $409 and $419. The registration for 1936-1937 was 341; graduates, 89. The next session begins Sept. 16, 1937, and ends June 4, 1938. The Dean is John Walker Moore, M.D.

LOUISIANA

New Orleans

LOUISIANA STATE UNIVERSITY MEDICAL CENTER, 1542 Tulane Avenue.—Organized January, 1931. Coeducational. First session October, 1931, with students of first and third year. Faculty comprises 33 professors and 122 assistant professors, instructors and assistants, a total of 155. Course covers four years of no less than 32 weeks each and one year of general rotation or laboratory internship in approved hospital. A minimum of three years' collegiate work is required for admission. Total fees, $92 each year for residents of Louisiana; additional tuition of $300 each year for nonresidents. The registration for 1936-1937 was 311; graduates, 43. The next session begins Sept. 13, 1937, and ends May 28, 1938. The Dean is Arthur Vidrine, M.D.

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, 1430 Tulane Avenue.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847, and became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. The faculty comprises 30 professors and 138 associate and assistant professors, instructors and assistants, a total of 168. The course covers four years of thirty-two weeks each. A minimum of two years of collegiate work is required for admission. Total fees for each of the four years, respectively, are $455, $445, $430 and $440. The registration for 1936-1937 was 466; graduates, 113. The next session begins Sept. 24, 1937, and ends June 8, 1938. The Dean is Charles C. Bass, M.D.

MARYLAND

Baltimore

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE, Washington and Monument Streets.—Organized in 1887. Offered preliminary course only until 1893. The first class graduated in 1897. Coeducational since organization. The faculty consists of 69 professors and 334 instructors, assistants and others, a total of 403. The requirements for admission is a collegiate degree. The course extends over four years of eight and one-half months each. The total fees for each year are, respectively, $621, $620, $620 and $620. The registration for 1936-1937 was 274; graduates, 63. The next session begins Oct. 5, 1937, and ends June 14, 1938. The Dean is Alan M. Chesney, M.D.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged with it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. The faculty consists of 46 professors, 67 associate and assistant professors, and 187 instructors and assistants, a total of 300. Three years of collegiate work is required for admission. The course covers four years of eight months each. The fees for the four years, respectively, are: $435, $425, $425 and $440 for residents of the state; for nonresidents the fees are $200 additional each year. The registration for 1936-1937 was 393; graduates, 114. The next session begins Sept. 21, 1937, and ends June 4, 1938. The Dean is J. M. H. Rowland, M.D.

MASSACHUSETTS

Boston

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord St.—Organized in 1873 as a homeopathic institution. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class was graduated in 1874. Became nonsectarian in 1918. Coeducational since organization. Three years of collegiate work is required for admission. The faculty includes 27 professors, 152 associates and others, a total of 179. The course covers four years. Total fees for each of the four years, respectively, are $426, $421, $421 and $435. The registration for 1936-1937 was 215; graduates, 56. The next session begins Sept. 23, 1937, and ends June 13, 1938. The Dean is Alexander S. Begg, M.D.

HARVARD UNIVERSITY MEDICAL SCHOOL, 25 Shattuck Street.—Organized in 1782. The first class graduated in 1788. It has a faculty of 154 professors and 379 other instructors and assistants, a total of 533. Two years of collegiate work is required for admission. The total fees for each of the four years is $420, plus $5 the first year for matriculation. The registration for 1936-1937 was 526; graduates, 139. The next session begins Sept. 27, 1937, and ends June 23, 1938. The Dean is Charles Sidney Burwell, M.D.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. It has a faculty of 76 professors and 278 assistants, lecturers and others, a total of 354. A bachelor's degree is required for admission. The course covers four years of eight months each. The total fees for each of the four years are $512, $507, $407 and $417. The registration for 1936-1937 was 451; graduates, 117. The next session begins Sept. 22, 1937, and ends June 13, 1938. The Dean is A. Warren Stearns, M.D.

MICHIGAN

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Coeducational since 1870. It has a faculty of 25 professors, 20 associate professors, 27 assistant professors, 113 assistants, instructors and lecturers; a total of 185. The entrance requirements are ninety semester hours. The curriculum covers four years of nine months each. The total fees for Michigan students are $220 for each of the four years, respectively; for nonresidents, $350 a year. The registration for 1936-1937 was 468; graduates, 95. The next session begins Sept. 27, 1937, and ends June 18, 1938. The Dean is A. C. Furstenberg, M.D.

Detroit

WAYNE UNIVERSITY COLLEGE OF MEDICINE, 1316 St. Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with the title of Detroit College of Medicine and Surgery in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. In 1934 the name was changed by the action of the Detroit Board of Education to Wayne University College of Medicine, as a part of the program of consolidation of the Detroit City Colleges into a university system. Coeducational since 1917. Entrance requirement is an academic degree or 90 semester hours of academic credit with "combined degree" guaranteed by school of arts and sciences. The faculty consists of 42 professors, 187 lecturers and others, a total of 229. The course covers four years of nine months each and a fifth year of intern work. The total fees for each of the first four years are, for Wayne County residents, $283; for nonresidents who reside in Michigan, $383, and for nonresidents from outside the state, $408; for the fifth or intern year a diploma fee of $25. The registration for 1936-1937 was 279; graduates, 85. The next session begins Sept. 23, 1937, and ends June 18, 1938. The Dean is Raymond B. Allen, M.D.

MINNESOTA

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Coeducational since organization. The faculty includes 90 professors and 238 instructors, a total of 328. The curriculum covers four years of nine months each, and a year's internship in an approved hospital. The school is operated on the four-quarter plan. The entrance requirements are two years of university work, which must include six semester credits of rhetoric, eight semester credits of physics; thirteen credits of general chemistry, qualitative and quantitative analysis and organic chemistry, eight credits of zoology, and a reading knowledge of scientific German, with a "C" average in all subjects and in the sciences. Beginning with the academic year 1939-1940 the minimum entrance requirement will be three years of college work with the addition of general psychology, physical chemistry and genetics and eugenics to the above specified courses. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Bachelor of Medicine (M.B.) which is granted at the end of the four-year course. The M.D. degree is conferred after a year of intern work, of advanced laboratory work, or of public health work has been completed. Students are graduated at the end of any quarter in which work is completed and examinations passed. Total fees are $243 for residents and $393 for nonresidents, each year of three quarters. The registration for 1936-1937 was 492; graduates, 125. The next session begins Sept. 27, 1937, and ends June 11, 1938. The Dean is Harold S. Diehl, M.D.

MISSISSIPPI

University

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE.—Organized in 1903. Coeducational since organization. Gives only the first two years of the medical course. A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class. The session extends over eight and one-half months. Entrance requirement is three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The faculty includes 9 professors, 2 adjunct professors, 3 assistant professors and 10 instructors, assistants and others, a total of 24. The total fees for the first year are $353, and for the second year $325. The nonresident fee is $50 additional each year. The registration for 1936-1937 was 20. The next session begins Sept. 14, 1937, and ends May 30, 1938. The Dean is B. S. Guyton, M.D.

MISSOURI

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Coeducational since 1872. The faculty includes 18 professors and 10 instructors, lecturers and others, a total of 28. The entrance require-

ments are 90 semester hours of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. Total fees for the first year are $175, for the second, $200. Nonresidents of the state pay $25 per semester extra. The registration for 1936-1937 was 75. The next session begins Sept. 13, 1937, and ends June 7, 1938. The Dean is Dudley S. Conley, M.D.

St. Louis

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Boulevard. Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. The faculty is composed of 75 professors and 242 instructors and assistants, a total of 317. The requirement for admission is a qualitative standard of two years of collegiate study in the customary subjects, but applicants presenting meritorious credit in excess of the two year minimum are accepted by preference. The B.S. degree in medicine is still conferred in selected cases at the end of the second year but will be discontinued shortly. The curriculum covers four years of thirty-two weeks each. The summer is optional and offers courses academically equivalent to those in the regular session. The total fees for the four years, respectively, are $525, $420, $420 and $455. The registration for 1936-1937 was 484; graduates, 122. The next session begins Sept. 20, 1937, and ends June 1, 1938. The Dean is Alphonse M. Schwitalla, S.J., Ph.D.

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Coeducational since 1818. The faculty comprises 110 professors and 196 lecturers, instructors and others, a total of 306. Four years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the third or fourth year. The course is four years of eight months each. The total fees for the four years are, respectively, $424, $419, $419 and $424. The registration for 1936-1937 was 347; graduates, 94. The next session begins Sept. 23, 1937, and ends June 7, 1938. The Dean is Philip A. Shaffer, Ph.D.

NEBRASKA

Omaha

CREIGHTON UNIVERSITY SCHOOL OF MEDICINE, 306 North Fourteenth Street.—Organized in 1892 as the John A. Creighton Medical College. The first class graduated in 1893. Present title in 1921. Coeducational since organization. It has a faculty of 69 professors and 74 instructors, lecturers and assistants, a total of 143. Two years of collegiate work required for admission. The B.S. degree in medicine is conferred at the end of the second year. The curriculum covers four years of eight months each. The total fees each year for the four years are, respectively, $393, $393, $348 and $356. The registration for 1936-1937 was 264; graduates, 59. The next session begins Sept. 21, 1937, and ends June 2, 1938. The Dean is Bryan M. Riley, M.D.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The instruction of the first two years was given at Lincoln and of the last two at Omaha until 1913, when the work of all four years was transferred to Omaha. Coeducational since 1882. The faculty is composed of 66 professors and 54 lecturers and instructors, a total of 120. Three years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees for each of the four years, respectively, are $219, $214, $214 and $214. The registration for 1936-1937 was 336; graduates, 87. The next session begins Sept. 20, 1937, and ends June 6, 1938. The Dean is C. W. M. Poynter, M.D.

NEW HAMPSHIRE

Hanover

DARTMOUTH MEDICAL SCHOOL.—Organized by Dr. Nathan Smith in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Courses of the third and fourth year were discontinued in 1914. The faculty consists of 17 professors and 14 instructors, a total of 31. Three years of collegiate work is required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The fees for the first year are $460 and $450 for the second year. The registration for 1936-1937 was 42. The next session begins Sept. 22, 1937, and ends June 17, 1938. The Dean is John P. Bowler, M.D.

NEW YORK

Albany

ALBANY MEDICAL COLLEGE, 47 New Scotland Avenue.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915, Union University assumed educational control. Coeducational since 1915. The faculty is composed of 29 professors and 72 instructors, assistants and others, a total of 101. A collegiate degree is required for admission. The curriculum covers four years of eight months each. The total fees for four years, respectively, are $455, $430, $415 and $415. The registration for 1936-1937 was 100; graduates, 21. The next session begins Sept. 27, 1937, and ends June 13, 1938. The Dean is R. S. Cunningham, M.D.

Brooklyn

LONG ISLAND COLLEGE OF MEDICINE, 350 Henry Street.—Organized in 1858 as the Long Island College Hospital. The first class graduated in 1860 and the last class in 1930. Reorganized with a new charter in 1930 as the present institution. The first class graduated in 1931. Coeducational. It has a faculty of 119 professors, associate, assistant, clinical and assistant clinical professors, and 163 lecturers, associates, instructors, assistants and others, a total of 282. Seventy-two semester hours of collegiate work is required for admission. The course covers four years (first, second and fourth years of eight months each, and the third year of nine months). The total fee for each of the four years is $610. The registration for 1936-1937 was 364; graduates, 81. The next session begins Sept. 27, 1937, and ends June 9, 1938. The Dean is Jean A. Curran, M.D.

Buffalo

UNIVERSITY OF BUFFALO SCHOOL OF MEDICINE, 24 High Street.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The faculty is composed of 89 professors and 180 associates, assistants and others, a total of 269. Two years of collegiate work is required for admission. The course covers four years of eight months each. The total fees for each of the four years are, respectively, $530, $525, $520 and $530. The registration for 1936-1937 was 261; graduates, 58. The next session begins Oct. 4, 1937, and ends June 11, 1938. The Dean is Edward W. Koch, M.D.

New York—Ithaca

CORNELL UNIVERSITY MEDICAL COLLEGE, 1300 York Avenue, New York City. Organized in 1898. The work of the first year may be taken either in New York City or Ithaca. Coeducational since organization. The faculty is composed of 115 professors and 269 assistants, lecturers, instructors and others, a total of 384. All candidates for admission must be graduates of approved colleges or scientific schools, or seniors of approved colleges that will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the baccalaureate degree on the completion of the first year's work. The fees for each of the four years are, respectively: $510, $500, $510 and $525. The registration for 1936-1937 was 296; graduates, 71. The next session begins Sept. 27, 1937, and ends June 15, 1938. The Dean is William S. Ladd, M.D.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 630 West One Hundred and Sixty-Eighth Street.—The medical faculty of Columbia College, then known as King's College, was organized in 1767. Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons, which had received an independent charter in 1807. In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The medical school has been coeducational since 1917. The faculty is composed of 206 professors and 435 instructors, demonstrators and others, a total of 641. Three years of collegiate work is required for admission. The work covers four years of eight months each. The total fees for the four years, respectively, are $545, $530, $530 and $550. The registration for 1936-1937 was 400; graduates, 94. The next session begins Sept. 16, 1937, and ends June 1, 1938. The Dean is Willard C. Rappleye, M.D.

NEW YORK MEDICAL COLLEGE AND FLOWER HOSPITAL, 450 East Sixty-Fourth Street.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869; the title New York Homeopathic Medical College and Flower Hospital in 1908; present title May 11, 1936. The first class graduated in 1861. Coeducational since 1919. A baccalaureate degree or its equivalent required for admission. The course covers four years of eight months each. It has a faculty of 68 professors and associate professors, 30 assistant professors and 194 lecturers and assistants, a total of 292. The total fees for the four years are, respectively, $640, $630, $630 and $660. The registration for 1936-1937 was 288; graduates, 89. The next session begins Sept. 20, 1937, and ends June 7, 1938. The Dean is Claude A. Burrett, M.D.

NEW YORK UNIVERSITY COLLEGE OF MEDICINE, 477 First Avenue.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. Named University and Bellevue Hospital Medical College from 1898 to February 1935 when it was changed to New York University College of Medicine. First class graduated in 1899. Coeducational since 1919. The faculty is composed of 136 professors, associate, assistant, clinical and assistant clinical professors, and 298 lecturers, instructors and others, a total of 434. The course covers four years. Entrance requirements are that all candidates must be graduates of approved colleges or scientific schools, or seniors in good standing in approved colleges or scientific schools on condition that their faculty will permit them to substitute the first year in the New York University College of Medicine for the fourth year of their college course and will confer the bachelor's degree on the satisfactory completion of the year's work. The fees for each of the four years is $600. The next session begins Sept. 15, 1937, and ends June 8, 1938. The registration for 1936-1937 was 514; graduates, 139. The Assistant Dean is Currier McEwen, M.D.

Rochester

University of Rochester School of Medicine, Elmwood Avenue and Crittenden Boulevard.—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. The faculty is composed of 60 professors, 166 lecturers, assistants, instructors and others, a total of 226. The work embraces a graded course of four years of nine months each. Three years of collegiate work is required for admission. The total fees for each year are $400. The registration for 1936-1937 was 166; graduates, 35. The next session begins Sept. 20, 1937, and ends June 18, 1938. The Dean is George Hoyt Whipple, M.D.

Syracuse

Syracuse University College of Medicine.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Coeducational since organization. The faculty is composed of 46 professors and 156 associate and assistant professors, lecturers and instructors, a total of 202. Two years of a recognized college course is required for admission. The course covers four years of thirty-four weeks each. The fee for each of the first three years is $500; for the fourth year, $310. The enrolment for 1936-1937 was 173; graduates, 49. The next session begins Sept. 23, 1937, and ends June 6, 1938. The Dean is H. G. Weiskotten, M.D.

NORTH CAROLINA

Chapel Hill

University of North Carolina School of Medicine.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Coeducational since 1914. Three years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the first year. The faculty is composed of 14 professors and 7 instructors, a total of 21. The fees for each year are $285 for residents; nonresidents, an additional fee of $100. The registration for 1936-1937 was 68. The next session begins Sept. 16, 1937, and ends June 7, 1938. The Dean is W. deB. MacNider, M.D.

Durham

Duke University School of Medicine.—Organized in 1925. The first class was admitted, Oct. 1, 1930. Coeducational. The faculty is composed of 10 professors and 93 associate and assistant professors, lecturers, instructors and assistants, a total of 103. The entrance requirements are seventy hours of collegiate work. The academic year consists of four quarters of eleven weeks each. Students either may study four quarters each year after the first year, and if satisfactory will receive the M.D. certificate after three and one quarter calendar years, or three quarters in each year, and if satisfactory will be graduated after four calendar years. The B.S. degree in medicine may be conferred for special work after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years. The fees are $450 for each year of three quarters. The registration for 1936-1937 was 243; graduates, 55. The next session begins Sept. 30, 1937, and ends June 6, 1938. The Dean is Wilburt C. Davison, M.D.

Wake Forest

Wake Forest College School of Medical Sciences.—Organized in 1902. The faculty numbers 11 professors, 7 instructors and 8 undergraduate assistants. Ninety semester hours of collegiate work are required for admission. Each annual course extends over nine months. The fees for each of the first two years are $300. The registration for 1936-1937 was 49. The next session begins Sept. 14, 1937, and ends May 31, 1938. The Dean is C. C. Carpenter, M.D.

NORTH DAKOTA

Grand Forks

University of North Dakota School of Medicine.—Organized in 1905. Offers only the first two years of the medical course. Coeducational since organization. Three years' work in a college of liberal arts is required for admission. The B.S. degree in combined arts-medical course is conferred at the end of the second year. The faculty consists of 5 professors and 8 instructors, a total of 13. The fees are $75 each year for resident students and $165 for nonresidents. The registration for 1936-1937 was 53. The next session begins Sept. 20, 1937, and ends June 7, 1938. The Dean is H. E. French, M.D.

OHIO

Cincinnati

University of Cincinnati College of Medicine, Eden and Bethesda Avenues.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Coeducational since organization. Candidates for admission to the freshman class must present three years of college preparation of not less than ninety hours. The B.S. degree in medicine is conferred at the end of the second year. The faculty consists of 50 professors and 385 associates, assistants, etc., a total of 435. The course covers four years of eight months each. A year's internship in an approved hospital is also required. The total fees for the four years are, respectively, $360, $365, $360 and $370, and if not legal citizens of Cincinnati, $50 additional. The registration for 1936-1937 was 296; graduates, 69. The next session begins Sept. 20, 1937, and ends June 3, 1938. The Dean is Alfred Friedlander, M.D.

Cleveland

Western Reserve University School of Medicine, 2109 Adelbert Road.—Organized in 1843 as the Cleveland Medical College in cooperation with Western Reserve College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. The faculty includes 79 professors and 205 lecturers, assistants and others, a total of 284. The curriculum covers three years of nine months each and one year of ten months. Three years of collegiate work is required for admission and a baccalaureate degree for graduation. The total fees for each of the four years are, respectively, $425, $425, $415 and $425. The registration for 1936-1937 was 266; graduates, 61. The next session begins Sept. 23, 1937, and ends June 15, 1938. The Dean is Torald Sollmann, M.D.

Columbus

Ohio State University College of Medicine, Neil and Eleventh Avenues.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized in 1847 by charter granted by the State Legislature changing the name from Willoughby Medical College, which was chartered March 3, 1834) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Coeducational since organization. The faculty consists of 59 professors, associate and assistant professors, 95 lecturers, instructors, demonstrators and others, a total of 154. Three years of collegiate work is required for admission. The course covers four years of thirty-four weeks each. Tuition fees are $246, $231, $231 and $231 each year, respectively, for residents of Ohio, and $150 additional for nonresidents. The registration for 1936-1937 was 352; graduates, 94. The next session begins Sept. 28, 1937, and ends June 13, 1938. The Dean is J. H. J. Upham, M.D.

OKLAHOMA

Oklahoma City

University of Oklahoma School of Medicine.—Organized in 1900. Gave only the first two years of the medical course at Norman until 1910, when a clinical department was established at Oklahoma City. The first class graduated in 1911. Coeducational since organization. Since September, 1928, the entire course has been given at Oklahoma City. It has a faculty of 27 professors, 24 associate professors, 20 assistant professors, 15 associates, 3 lecturers, 54 instructors and 12 assistants, a total of 155. Two years of collegiate work is required for admission. The B.S. in medicine degree is conferred at the end of the second year. The course covers four years of nine months each. The total fees for the four years are, respectively, $128, $95, $53 and $58. For students residing outside the State of Oklahoma there is an additional fee of $250 a year. The registration for 1936-1937 was 239; graduates, 59. The next session begins Sept. 20, 1937, and ends June 6, 1938. The Dean is Robert U. Patterson, M.D.

OREGON

Portland

University of Oregon Medical School, Marquam Hill.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. It has a faculty of 71 professors and 190 lecturers, assistants and others, a total of 261. Entrance requirements are three years of collegiate work. The course covers four years of thirty-three weeks each. The total fees for the four years are, respectively, $320, $315, $310 and $316 for residents of Oregon, and $60 a year additional for nonresidents. The registration for 1936-1937 was 240; graduates, 53. The next session begins Oct. 4, 1937, and ends June 4, 1938. The Dean is Richard B. Dillehunt, M.D.

PENNSYLVANIA

Philadelphia

Hahnemann Medical College and Hospital of Philadelphia, 235 North Fifteenth Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Two years of collegiate work in a college of arts and science is required for admission. It has a faculty of 82 professors and 177 lecturers, instructors, and others, in all, 259. The work covers four years of eight and one-half months each. Fees for each of the four years are, respectively, $505, $502, $502 and $525. The registration for 1936-1937 was 544; graduates, 121. The next session begins Sept. 27, 1937, and ends June 9, 1938. The Dean is William A. Pearson, Ph.D.

Jefferson Medical College of Philadelphia, 1025 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa. It was chartered with its present title in 1838. Classes have been graduated annually beginning 1826. In 1838 a separate univer-

sity charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 71 professors, associate and assistant professors and 179 associates, lecturers, demonstrators and instructors, a total of 250. Four years of college work and a bachelor's degree are required for admission. The course of study covers four years of eight and one-half months each. The total fees for the four years are, respectively, $445, $435, $425 and $425. The registration for 1936-1937 was 518; graduates, 138. The next session begins Sept. 20, 1937, and ends June 3, 1938. The Dean is Ross V. Patterson, M.D.

TEMPLE UNIVERSITY SCHOOL OF MEDICINE, Broad and Ontario Streets.—Organized in 1901. The first class graduated in 1904. Coeducational since organization. The faculty numbers 33 professors and 206 associates, assistants and others, a total of 239. Three years of collegiate work is required for admission. The fees for each of the four years, respectively, are $485, $455, $435 and $455. The registration for 1936-1937 was 447; graduates, 116. The next session begins Sept. 22, 1937, and ends June 16, 1938. The Dean is William N. Parkinson, M.D.

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth and Pine Streets.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. The faculty consists of 97 professors, associate and assistant professors, and 334 lecturers, associates, instructors and others, a total of 431. Three years of collegiate work is required for admission. The course covers four years of thirty-three weeks each. The tuition fee is $500 each year, with a deposit fee of $15, a student health fee of $10 and a matriculation fee of $5. The registration for 1936-1937 was 499; graduates, 134. The next session begins Sept. 27, 1937, and ends June 8, 1938. The Dean is William Pepper, M.D.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Henry Avenue and Abbottsford Road, East Falls.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 48 professors and 65 assistants, lecturers and others, in all, 113. Three years of collegiate work is required for admission. The curriculum covers four years of eight months each. Total fees for each of the four years are, respectively, $440, $433, $423 and $455. The registration for 1936-1937 was 204; graduates, 72. The next session begins Sept. 22, 1937, and ends June 8, 1938. The Dean is Martha Tracy, M.D.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Bigelow Boulevard.—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Coeducational since 1899. The faculty is composed of 27 professors and 262 associates, assistants and others, 289 in all. Entrance requirements are two years of collegiate work. The course of study is four years of eight and one-half months each. The total fees for the four years, respectively, are $500, $500, $500 and $415. The registration for 1936-1937 was 229; graduates, 62. The next session begins Sept. 20, 1937, and ends June 8, 1938. The Dean is R. R. Huggins, M.D.

SOUTH CAROLINA

Charleston

MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. Coeducational from 1895 to 1912, when privileges for women were withdrawn, being restored in 1917. It has a faculty of 39 professors and 38 lecturers, instructors and others, a total of 77. The course covers four years of eight months each. Three years of collegiate work is required for admission. The total fees are $270 each year. Fees for nonresidents of the state, $420 each year. The enrolment for 1936-1937 was 174; graduates, 45. The next session begins Sept. 23, 1937, and ends June 2, 1938. The Dean is Robert Wilson, M.D.

SOUTH DAKOTA

Vermilion

UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1907. Coeducational since organization. Offers only the first two years of the medical course. Two years' work in a college of liberal arts is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The faculty numbers 11. The tuition is $100 each year for residents and $200 for nonresidents. The registration for 1936-1937 was 43. The next session begins Sept. 15, 1937, and ends June 6, 1938. The Dean is Joseph C. Ohlmacher, M.D.

TENNESSEE

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, 874 Union Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicans and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. The faculty includes 97 professors and 122 assistants, instructors and others, a total of 219. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees are $120 quarterly. For residents of the state the charge is reduced $50 each quarter. The registration for 1936-1937 was 423; graduates, 102. During the academic year of 1937-1938 the quarters begin July 9, Sept. 27, Dec. 31 and March 21, and end Sept. 25, Dec. 18, March 23 and June 11. The Dean is O. W. Hyman, Ph.D.

Nashville

MEHARRY MEDICAL COLLEGE, Eighteenth Avenue North and Heffernan Street.—This school was organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Coeducational since 1876. The faculty is made up of 25 professors and 24 instructors, demonstrators, lecturers and others, 49 in all. Two years' work in a college of liberal arts is required for admission. The curriculum covers four years of thirty-two weeks each. Tuition fees are, respectively, $270, $250, $250 and $260 each year. The registration for 1936-1937 was 200; graduates, 35. The next session begins Oct. 1, 1937, and ends May 19, 1938. The President is John J. Mullowney, M.D.

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE, Twenty-First Street at Edgehill.—This school was founded in 1874. The first class graduated in 1875. Coeducational since September 1925. The faculty numbers 223. For matriculation, students must be graduates of collegiate institutions of recognized standing or seniors in absentia, who will receive the bachelor degree from their college after having completed successfully at least one year of work in the school of medicine. The course covers four years of nearly nine months each. The total fees for the four years, respectively, are $315, $315, $315 and $320. The registration for 1936-1937 was 197; graduates, 51. The next session begins Sept. 20, 1937, and ends June 8, 1938. The Dean is Waller S. Leathers, M.D.

TEXAS

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 810 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. Coeducational since organization. The first class graduated in 1901. The faculty consists of 68 professors and 95 instructors and assistants, a total of 163. Entrance requirements are two years of collegiate work. The course covers four years of eight months each. The fees for each of the four years, respectively, are $364, $354, $349 and $374. The registration for 1936-1937 was 338; graduates, 78. The next session begins Oct. 1, 1937, and ends June 6, 1938. The Dean is W. H. Moursund, M.D.

Galveston

UNIVERSITY OF TEXAS SCHOOL OF MEDICINE, 912 Avenue B.—Organized in 1891. The first class graduated in 1892. Coeducational since organization. It has a faculty of 41 professors and 14 lecturers and instructors, a total of 55. The curriculum covers four years of eight months each. The entrance requirement is two years of collegiate work for 1937-1938. This will be increased to 90 semester hours beginning in September, 1938. The total fees for the four years, respectively, are $88, $92, $100 and $104. There is a matriculation fee of $50 for each year. The registration for 1936-1937 was 367; graduates, 79. The next session begins Oct. 1, 1937, and ends May 31, 1938. The Dean is W. S. Carter, M.D.

UTAH

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE.—Organized in 1906. Coeducational since organization. Gives only first two years of medical course. Each school year covers thirty-six weeks. Three years of collegiate work is required for admission. The medical faculty consists of 8 professors, 3 instructors, 16 lecturers, demonstrators and fellows and 2 technicians; a total of 29. The fees are $228 per year. There is a nonresident fee of $25 per quarter. The registration for 1936-1937 was 59. The next session begins Sept. 27, 1937, and ends June 3, 1938. The Dean is L. L. Daines, M.D.

VERMONT

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Coeducational since 1920. It has a faculty of 39 professors and 26 lecturers, instructors, preceptors and others, a total of 67. Two years of collegiate work is required for admission. The course of study covers four years of nine months each. For residents of Vermont the tuition fee is $300 each session. Nonresidents are charged an additional $75 each session. A student activity fee of $30 is charged all students not holding academic degrees or in attendance four years previously, and a $25 fee for the Doctor's degree. The registration for 1936-1937 was 164; graduates, 50. The next session begins Sept. 17, 1937, and ends June 13, 1938. The Dean is James N. Jenne, M.D.

109
37

VIRGINIA

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Coeducational since the session of 1920-1921. It has a faculty of 37 professors and 32 lecturers, instructors, assistants and others, a total of 69. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year when special requirements are fulfilled. For residents of Virginia the total fees for the four years, respectively, are $399, $376, $351 and $346. Nonresidents are charged an additional $50 each year. The registration for 1936-1937 was 247; graduates, 61. The next session begins Sept. 16, 1937, and ends June 13, 1938. The Dean is J. Carroll Flippin, M.D.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Twelfth and Clay Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Coeducational since 1918. Classes were graduated in 1839 and in all subsequent years. It has a faculty of 73 professors and 82 lecturers, instructors and others, a total of 155. Three years of collegiate work is required for admission. The course covers four years of eight and one-half months each. Total fees for the four years, respectively, are $335, $335, $320 and $350. Nonresidents are charged an additional $125 each year. The registration for 1936-1937 was 307; graduates, 82. The next session begins Sept. 7, 1937, for the first year class; Sept. 17, 1937, for all other classes, and ends June 7, 1938. The Dean is Lee E. Sutton Jr., M.D.

WEST VIRGINIA

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, gives the first two years of the medical course. Coeducational since organization. Three years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. Session extends through nine months. Faculty numbers 24. Fees for residents of the state, $234; nonresidents, $404, each year. The registration for 1936-1937 was 41. The next session begins Sept. 14, 1937, and ends June 7, 1938. The Dean is Edward J. Van Liere, M.D.

WISCONSIN

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL, 412 North Charter Street.—Organized in 1907. Gave only the first two years of the medical course until 1925, when the clinical years were added. Coeducational since organization. Three years of collegiate work are required for admission. The B.S. degree in medical science is conferred at the end of the first year. It has a faculty of 64 professors and 67 lecturers, instructors and others, a total of 131. The fees for each year are, respectively, $212, $192, $165 and $110. An additional fee of $200 each year is charged nonresidents. The registration for 1936-1937 was 300; graduates, 48. The next session begins Sept. 22, 1937, and ends June 20, 1938. The Dean is William S. Middleton, M.D.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, 561 North Fifteenth Street.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. It has a faculty of 153. Two years of collegiate work is required for admission. The curriculum covers four years of eight and a half months each, and one year's internship in an approved hospital. The fees for the first year are $412; for each of the three following years, $400. The registration for 1936-1937 was 311; graduates, 94. The next session begins Sept. 24, 1937, and ends June 15, 1938. The Dean is Eben J. Carey, M.D.

CANADA

Alberta

UNIVERSITY OF ALBERTA FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Coeducational since organization. Has given the complete six-year medical course since 1924. The faculty includes 8 full time and 77 part time professors, instructors, assistants and others, a total of 85. Tuition for the first year is $150, for the second, third and fourth years, $215; for the fifth and sixth years, $225. The registration for 1936-1937 was 205; graduates, 32. The next session begins Sept. 24, 1937, and ends April 30, 1938. The Dean is Allen C. Rankin, M.D.

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE, Bannatyne Avenue, Winnipeg. Organized in 1883 as Manitoba Medical College; first class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Coeducational since organization. The faculty includes 26 professors and 75 instructors and assistants, total of 101. Matriculation requirements include two years of collegiate work in the faculty of arts and science of a recognized university. The course extends over four years of eight months each and a hospital internship. The total fees for the five years, respectively, are $266, $266, $266, $266 and $115. The registration for 1936-1937 was 214; graduates, 52. The next session begins Sept. 17, 1937, and ends May 18, 1938. The Dean is A. T. Mathers, M.D.

Nova Scotia

DALHOUSIE UNIVERSITY FACULTY OF MEDICINE, Halifax.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the university. First class graduated in 1872. Coeducational since 1871. It has a faculty of 24 professors and 43 demonstrators, lecturers and others, a total of 67. Requires for matriculation two years of arts. The medical course covers four years and a hospital internship of one year. The fees are $317, $317, $317, $307 and $307 for each year, respectively; $250 additional registration fee payable by students outside the British Empire. The registration for 1936-1937 was 178; graduates, 28. The next session begins Sept. 14, 1937, and ends May 17, 1938. The Dean is H. G. Grant, M.D.

Ontario

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 56. The fee for the first year is $208 and $230 for each of the other five years. The course covers six years of thirty teaching weeks each. The registration for 1936-1937 was 294; graduates, 47. The next session begins Sept. 30, 1937, and ends May 25, 1938. The Dean is Frederick Etherington, M.D.

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL, Ottaway Avenue, London.—Organized in 1881 as the Western University Faculty of Medicine; first class graduated in 1883, and a class graduated each subsequent year. Present title in 1923. The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The faculty numbers 88. The course of study covers six years of eight months each. The total fees to residents of Canada for the last four years, respectively, are $225, $225, $233 and $258. The registration for 1936-1937 was 226; graduates, 46. The next session begins Sept. 20, 1937, and ends May 14, 1938. The Dean is F. J. H. Campbell, M.D.

UNIVERSITY OF TORONTO FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 it absorbed the Medical Faculty of Trinity University. Coeducational since 1903. The course of study covers six years of eight months each. The B.Sc. (Med.) degree is conferred at the end of the third or sixth year. It has a faculty of 67 professors and 285 lecturers, associates and others, a total of 352. The fees are $198 for the first year; for the second, $370; $268 for the third year; $293 for the fourth and fifth years, and $325 for the sixth year. The registration for 1936-1937 was 834; graduates, 109. The next session begins Sept. 28, 1937, and ends May 14, 1938. The Dean is W. E. Gallie, M.D.

Quebec

MCGILL UNIVERSITY FACULTY OF MEDICINE, 3640 University Street, Montreal.—Founded in 1823 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839, owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. Coeducational since 1919. Three years of collegiate work is required for admission. The length of the medical course is five years; beginning with the session of 1936-1937 it was changed to four years followed by one year of internship. The faculty consists of 55 professors and 161 lecturers and others, a total of 216. The total fees for each of the five medical years are $350. The registration for 1936-1937 was 483; graduates, 103. The next session begins Sept. 1, 1937, and ends May 31, 1938. The Dean is A. Grant Fleming, M.D.

UNIVERSITY OF MONTREAL FACULTY OF MEDICINE, 1265 St. Denis Street, Montreal.—Organized in 1843 as the Montreal School of Medicine and Surgery. In 1891, by act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name by act of Parliament in 1920. A class was graduated in 1843 and each subsequent year. Coeducational since 1925. The faculty numbers 125. One year premedical college work is required for admission to a five year medical course. The total fees for each of the five years, respectively, are $253, $229, $275, $243 and $218. The registration for 1936-1937 was 181; graduates, 51. The next session begins Sept. 15, 1937, and ends June 15, 1938. The Dean is Télesphore Parizeau, M.D.

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Laval University Faculty of Medicine; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 88. The fees for each of the medical years are $175, $185, $175, $175 and $195 for residents of Canada. Nonresidents are charged an extra fee of $190 each year. The premedical requirement is a B.A. degree. The registration for 1936-1937 was 271; graduates, 40. The next session begins Sept. 21, 1937, and ends May 31, 1938. The Dean is P. C. Dagneau, M.D.

Saskatchewan

UNIVERSITY OF SASKATCHEWAN SCHOOL OF MEDICAL SCIENCES, Saskatoon.—Organized in 1926. Coeducational. Offers the first two years of the medical course. Students require three more years of medicine for graduation. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The medical faculty includes 7 professors and 3 lecturers and assistants, a total of 10. The fees are $150 for each year. The registration for 1936-1937 was 50. The next session begins Sept. 23, 1937, and ends May 13, 1938. The Dean is W. S. Lindsay, M.B.

V 10
1937

HOSPITALS APPROVED FOR TRAINING INTERNS

The following general hospitals containing 225,694 beds are considered in position to furnish acceptable internships for medical graduates.

HOSPITALS, 712. INTERNSHIPS, 7,167

The terms used in the column "Type of Internship" are defined as follows:

1. Rotating internships include services in medicine, surgery, pediatrics, obstetrics and in the clinical and x-ray laboratories.

2. Straight internships are limited to a single field.

3. Mixed internships are those comprising more than one service but which do not include all of the six branches which constitute a rotating internship.

ABBREVIATIONS

Army	United States Army	Fed	Federal	Part	Partnership
CyCo	City and County	Frat	Fraternal	Req	Required
Corp	Corporation unrestricted as to profit	Indiv	Individual	USPHS	United States Public Health Service
		NPAssn	Nonprofit association		
		Op	Optional		

Name of Hospital	Location	Control	Capacity	Classification of Patients (Percentage) Free	Part Pay	Full Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Connection	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
ALABAMA															
Hillman Hospital	Birmingham	County	474	100			11,612	Mixed	20	24	July	No	Req	22	(d)
Employees' Hospital of the Tennessee Coal, Iron and Railroad Company	Fairfield	NPAssn	210			100	6,473	Rotating	8	12	July	No	Req	35	$25
John A. Andrew Memorial Hosp.[1] (col.)	Tuskegee Institute	NPAssn	102	40	40	20	1,861	Rotating	3	12	June & Sept.	No	Req	29	$6
ARIZONA															
St. Joseph's Hospital	Phoenix	Church	100	10	30	60	6,666	Rotating	5	12	July	No	None	39	$25
ARKANSAS															
Baptist State Hospital	Little Rock	Church	315	15	9	76	5,914	Rotating	4	12	July	No	None	39	$25
Little Rock City Hospital	Little Rock	City	112	100			1,700	Rotating	4	12	July	No	Req	19	$25
St. Vincent Infirmary	Little Rock	Church	150	21	18	61	5,688	Rotating	3	12	June	No	None	17	$25
CALIFORNIA															
Fresno County General Hospital	Fresno	County	518	99	1		7,395	Rotating	10	12	July	No	Req	33	$25
Glendale Sanitarium and Hospital[1]	Glendale	Church	216	1	21	78	3,375	Mixed	2	12	July	No	Req	29	$32.50(a)
Loma Linda Sanitarium and Hospital	Loma Linda	Church	124		12	88	2,786	Mixed	4	12	July	No	Req	36	$35(a)
California Hospital[1]	Los Angeles	Church	262	5	65	30	8,859	Rotating	10	12	Jan. & July	No	Req	24	$25
Cedars of Lebanon Hospital	Los Angeles	NPAssn	288	19	4	77	7,042	Rotating	9	12	July	No	Req	47	$30
Hollywood Hospital	Los Angeles	NPAssn	275			100	6,719	Mixed	5	12	July	No	None	44	$25
Los Angeles County Hospital[1]	Los Angeles	County	3,306	100			53,906	Mixed	120	24	July	No	Req	61	$10
St. Vincent's Hospital	Los Angeles	Church	254	5	4	91	5,572	Rotating	4	12	July	No	None	38	$40
Santa Fe Coast Lines Hospital	Los Angeles	NPAssn	150			*	2,330	Rotating	6	12	July	(4)	Req	70	$25
White Memorial Hospital[1]	Los Angeles	Church	120	2	38	60	3,800	Rotating	12	12	July & Sept.	No	Req	39	$40(a)
U. S. Naval Hospital	Mare Island	Navy	405	92	8		2,850	Rotating	..	12	July	...	Req	64	(b)
Alameda County Hospital[1]	Oakland	County	350	100			10,304	Rotating	24	12	July	(5)	None	56	$30
Orange County Hospital	Orange	County	288	98	2		3,012	Rotating	8	12	July	No	Req	66	$15-30
Collis P. and Howard Huntington Memorial Hospital	Pasadena	NPAssn	300	5	15	80	5,155	Rotating	5	12	Jan. & July	(6)	Req	62	$30
Sacramento County Hospital	Sacramento	County	500	100			8,382	Rotating	10	12	July	No	Req	42	$35
San Bernardino County Charity Hosp.	San Bernardino	County	225	100			5,705	Rotating	8	12	July	(3)	Req	33	$25
San Diego County General Hospital	San Diego	County	663	100			8,854	Rotating	13	12	July	No	Req	31	$30
U. S. Naval Hospital	San Diego	Navy	1,000	100			6,741	Rotating	..	12	July	(7)	Req	86	(b)
Franklin Hospital[1]	San Francisco	NPAssn	245	1	21	78	5,840	Rotating	6	12	July	No	Req	19	$25
French Hospital	San Francisco	Frat	220	23	20	57	5,780	Rotating	6	12	July	No	Req	32	$30(c)
Hospital for Children[2]	San Francisco	NPAssn	250	10	25	65	4,239	Rotating	10	12	July	No	Req	41	No
Letterman General Hospital	San Francisco	Army	610	100			4,702	Rotating	6	12	July	No	Req	88	(b)
Mary's Help Hospital	San Francisco	Church	145	6	19	75	5,975	Rotating	5	12	July	No	Req	43	$25
Mount Zion Hospital[1]	San Francisco	NPAssn	189	17	13	70	3,907	Rotating	6	12	June	No	Req	38	$15
St. Joseph's Hospital	San Francisco	Church	232	5	6	91	7,054	Rotating	5	12	July	No	None	24	$20
St. Luke's Hospital	San Francisco	Church	225	10	10	80	5,000	Rotating	4	12	July	No	Op	45	$15
St. Mary's Hospital	San Francisco	Church	325	2	13	85	6,670	Rotating	7	12	July	No	Req	32	$25
San Francisco Hospital[1]	San Francisco	CyCo	1,516	100			12,730	Rotating	48	12	July	(8)	Req	50	$10
Southern Pacific General Hospital	San Francisco	NPAssn	400			*	4,560	Rotating	16	12	July	(9)	Req	44	$30
Stanford University Hospitals[1] (including Lane Hospital)	San Francisco	NPAssn	224	4	50	46	9,636	Straight	15	12	July	No	Req	32	No
U. S. Marine Hospital	San Francisco	USPHS	403	100			4,695	Rotating	10	12	July	(10)	Op	63	(b)
University of California Hospital[1]	San Francisco	State	294	63		37	6,262	Straight	20	12	June	No	Req	62	No
St. Helena Sanitarium and Hospital[1]	Sanitarium	Church	136			*	2,052	Mixed	2	12	July	(11)	None	29	$30(a)
Santa Clara County Hospital	San Jose	County	400	100			5,870	Rotating	8	12	July	No	Req	36	$30(c)
St. Francis Hospital	Santa Barbara	Church	100	10	12	78	1,806	Mixed	4	12	July	(12)	Req	45	$20
Santa Barbara Cottage Hospital[1]	Santa Barbara	NPAssn	210			100	5,337	Mixed	5	12	July	No	None	45	$30
Santa Barbara General Hospital	Santa Barbara	County	245	98	1	1	2,111	Rotating	6	12	July	No	Req	52	$15
COLORADO															
Boulder-Colorado Sanit. and Hosp.[1]	Boulder	Church	107	2	34	64	1,487	Mixed	1	12	July	No	Op	30	$35
Beth-El General Hospital[1]	Colorado Springs	Church	115	22	10	68	2,447	Rotating	3	12	July	No	None	28	$30
St. Francis Hospital and Sanatorium	Colorado Springs	Church	150	10	60	30	1,364	Mixed	2	12	July	No	None	16	$25
Colorado General Hospital[1]	Denver	State	180	80	20		3,482	Rotating	12	12	July & Aug.	No	Req	74	$20
Denver General Hospital	Denver	CyCo	607	100			14,157	Rotating	15	18	Jan. & July	No	Req	40	$30
Mercy Hospital	Denver	Church	300	9	26	65	5,475	Rotating	4	12	July	No	None	22	$25
Presbyterian Hospital	Denver	Church	175	3	8	89	4,167	Mixed	4	12	July	No	None	26	$25
St. Anthony Hospital	Denver	Church	212	6	91	3	3,000	Rotating	5	12	July	No	None	18	$25
St. Joseph's Hospital	Denver	Church	260	48	21	31	4,444	Rotating	5	12	July	No	None	26	$25
St. Luke's Hospital	Denver	Church	249		52	48	6,251	Rotating	6	12	July	No	None	43	$25
St. Mary Hospital	Pueblo	Church	102	13	70	17	2,516	Rotating	2	12	July	No	None	28	(f)
CONNECTICUT															
Bridgeport Hospital	Bridgeport	NPAssn	400	43		57	10,032	Rotating	8	12	July	No	None	47	$10
St. Vincent's Hospital[1]	Bridgeport	Church	250	40	46	14	5,808	Rotating	7	12	July	No	Req	25	$30
Danbury Hospital	Danbury	NPAssn	161	26	60	14	2,967	Rotating	3	12	July	No	Req	30	$40
Hartford Hospital	Hartford	NPAssn	771	2	53	45	13,898	Rotating	24	24	July	No	None	46	(g)
Municipal Hospitals	Hartford	City	340	100			5,423	Rotating	10	24	July	No	Req	29	$10

Numerical and other references will be found on page 692.

Name of Hospital	Location	Control	Capacity	Classification of Patients Percentage: Free	Part Pay	Full Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
CONNECTICUT—Continued															
St. Francis Hospital	Hartford	Church	325	4	32	64	8,108	Rotating	9	12	July	No	Req	26	No
Meriden Hospital	Meriden	NPAssn	136	2	91	7	2,761	Rotating	4	12	July	No	Req	32	$15(h)
Middlesex Hospital	Middletown	NPAssn	160	21	29	50	5,342	Rotating	3	12	June & July	No	None	25	$20(i)
New Britain General Hospital	New Britain	NPAssn	253	21	67	12	4,016	Rotating	5	12	July	No	Req	18	$30
Grace Hospital	New Haven	NPAssn	287	10	45	45	5,937	Rotating	9	24	July	No	Req	27	$10
Hospital of St. Raphael	New Haven	Church	265	39	32	29	6,175	Rotating	6	12	July & Sept.	No	Req	27	$20
New Haven Hospital [1]	New Haven	NPAssn	511	43	34	23	8,121	Mix&Str	31	12-30	(1-a)	No	Req	67	No
Lawrence and Memorial Associated Hospitals	New London	NPAssn	237	26	18	56	3,810	Rotating	4	12	July	No	Req	26	$22.50
Norwalk General Hospital	Norwalk	NPAssn	180	12	60	28	3,831	Mixed	3	12	Jan. & July	No	Req	50	$30
William W. Backus Hospital	Norwich	NPAssn	150	8	74	18	3,060	Rotating	2	12	July & Sept.	No	Req	24	$10
Stamford Hospital	Stamford	NPAssn	159	9	67	24	4,256	Rotating	6	12	Jan. & July	No	Req	15	$45
St. Mary's Hospital	Waterbury	Church	264	16	52	32	7,845	Rotating	5	12	July	No	Req	37	$25
Waterbury Hospital	Waterbury	NPAssn	280	3	89	8	5,650	Rotating	7	12	July & Oct.	No	Req	39	$25
DELAWARE															
Delaware Hospital	Wilmington	NPAssn	225	53	10	37	4,568	Rotating	7	12	July	No	Req	18	$25
Homoeopathic Hospital	Wilmington	NPAssn	108	46	4	50	3,920	Rotating	6	12	July	No	Req	29	$25
Wilmington General Hospital	Wilmington	NPAssn	160	50	10	40	2,803	Rotating	4	12	July	No	Req	25	$15(j)
DISTRICT OF COLUMBIA															
Central Disp. and Emergency Hospital	Washington	NPAssn	270	21	9	70	8,528	Mixed	13	12	July	No	Req	39	$10
Freedmen's Hospital [1] (col.)	Washington	Fed	356	95		14	4,830	Rotating	25	12	July & Oct.	No	Req	31	$10
Gallinger Municipal Hospital [1]	Washington	City	1,256	99		1	16,037	Rotating	24	18	Jan. & July	(13)	None	34	$15
Garfield Memorial Hospital [1]	Washington	NPAssn	311	17	58	25	6,486	Mixed	10	12	July	No	Req	25	$10(l)
Georgetown University Hospital	Washington	NPAssn	264	4	40	56	5,658	Rotating	8	12	July	(14)	Req	16	$10
George Washington University Hosp. [1]	Washington	NPAssn	114	7	17	82	2,985	Mixed	4	12	July	No	Req	14	$15
Providence Hospital	Washington	Church	271	9	56	35	6,105	Rotating	9	12	July	No	Req	22	$10
St. Elizabeths Hospital, Medical and Surgical Department [1]	Washington	Fed	450	100			1,500	Rotating	8	24	July & Oct.	(15)	Req	60	(b)
Sibley Memorial Hospital [1]	Washington	Church	310	2	2	96	9,804	Rotating	7	12	July	No	Req	23	$30
U. S. Naval Hospital	Washington	Navy	307	100			1,579	Rotating		12	July	No	Op	73	(b)
Walter Reed General Hospital	Washington	Army	1,224	100			7,505	Rotating	6	12	July	No	None	74	(b)
Washington Sanitarium and Hospital, Takoma Park	Washington	Church	185	6	28	66	2,865	Mixed	2	12	July	No	Req	33	$60(a)
FLORIDA															
Brewster Hospital (col.)	Jacksonville	Church	75	6	84	10	1,628	Mixed	2	12	July	No	Req	21	$25
Duval County Hospital	Jacksonville	City	610	100			10,940	Rotating	42	12	July	No	Req	47	$15-30
St. Luke's Hospital	Jacksonville	NPAssn	175	20		80	3,643	Rotating	4	12	July	No	Req	26	$25
St. Vincent's Hospital	Jacksonville	Church	240	30	10	60	3,770	Rotating	4	12	July	No	None	31	$30
James M. Jackson Memorial Hospital	Miami	City	300	50	20	30	10,956	Rotating	15	24	July	No	Req	18	(k)
Tampa Municipal Hospital	Tampa	City	214	47		53	5,498	Rotating	7	12	July & Sept.	No	Req	16	$25
GEORGIA															
Georgia Baptist Hospital	Atlanta	Church	194	9	15	76	6,648	Mixed	6	12	July	(16)	Op	15	$30
Grady Hospital	Atlanta	City	613	100			19,940	Rotating	42	12	July	No	Req	16	$15
Piedmont Hospital	Atlanta	Corp	135			100	3,300	Rotating	5	12	July	No	None	29	$25
University Hospital [1]	Augusta	City	328	50		50	8,000	Rotating	11	12	July	No	Req	50	$10(e)
Emory Hospital	Emory University	NPAssn	196	3	12	85	4,601	Rotating	7	12	July	(17)	None	29	$30
Macon Hospital	Macon	CyCo	202	70		30	4,622	Rotating	5	12	July	No	Req	17	$25
ILLINOIS															
Alexian Bros. Hosp. (male patients only)	Chicago	Church	257	14	29	57	5,116	Rotating	7	12	July	(18)	None	21	$40
American Hospital [1]	Chicago	City	375	20	75	5	2,255	Rotating	4	12	July	No	Op	58	No
Augustana Hospital	Chicago	Church	350	15	35	50	4,923	Mixed	10	18	Jan. & July	No	Op	27	No
Chicago Memorial Hospital	Chicago	NPAssn	108	31	63	6	2,647	Rotating	4	12	July	No	Req	46	No
Columbus Hospital	Chicago	Church	174	12	64	24	3,377	Rotating	4	12	July	No	None	48	$25
Cook County Hospital [1]	Chicago	County	3,300	100			27,880	Rotating	100	18	Jan. & July	No	Req	19	No
Edgewater Hospital	Chicago	NPAssn	114	14	12	74	5,824	Mixed	5	12	July	No	None	35	$10
Englewood Hospital	Chicago	NPAssn	136	10	30	60	3,060	Rotating	4	12	Jan. & July	No	Req	30	$35
Evangelical Hospital	Chicago	Church	260	14	36	50	7,975	Mixed	6	12	Jan. & July	No	None	15	$25
Frances E. Willard Hospital [1]	Chicago	NPAssn	137	2	90	8	4,111	Rotating	6	12	Jan. & July	No	None	28	No
Garfield Park Community Hospital	Chicago	NPAssn	120	7	18	75	5,478	Rotating	6	12	July	No	Op	24	No
Grant Hospital	Chicago	NPAssn	270	18		82	5,394	Rotating	8	12	July	No	Req	26	No
Henrotin Hospital	Chicago	NPAssn	122	5	66	29	2,999	Mixed	4	12	Jan. & July	No	Req	17	No
Holy Cross Hospital	Chicago	Church	114	20	30	50	3,959	Rotating	4	12	July	No	None	58	$10
Hospital of St. Anthony de Padua	Chicago	Church	240	6	4	90	4,472	Rotating	8	16	(1-b)	No	None	23	$10(m)
Illinois Central Hospital	Chicago	NPAssn	275	35	65		4,400	Rotating	9	12	(1-c)	No	Req	30	No
Illinois Masonic Hospital [1]	Chicago	Frat	184	10		90	2,305	Rotating	6	12	Jan. & July	No	Req	20	No
Jackson Park Hospital [1]	Chicago	Corp	140	20		80	4,218	Rotating	6	12&18	Feb. & July	(19)	Req	28	$10
Lake View Hospital	Chicago	Corp	150	2	5	93	1,895	Rotating	3	12	July	No	Req	35	$25
Lutheran Deaconess Home and Hospital	Chicago	Church	218	4	17	79	4,734	Mixed	5	12	July	No	None	23	$15
Lutheran Memorial Hospital [1]	Chicago	Church	201	8	40	52	2,784	Mixed	4	12	July	No	None	21	$25
Mercy Hospital	Chicago	Church	324	17	15	68	5,502	Rotating	12	12	July	No	Req	23	No
Michael Reese Hospital [1]	Chicago	NPAssn	658	44	33	23	17,652	Rotat&Str	45	12&24	Jan. & July	(20)	Op	45	No
Mother Cabrini Memorial Hospital	Chicago	Church	140	28	55	17	3,046	Rotating	4	12	July	No	None	34	$25
Mount Sinai Hospital	Chicago	NPAssn	307	31	9	60	4,930	Rotating	12	24	June	(20)	Req	39	No
Norwegian American Hospital	Chicago	NPAssn	219	2	1	97	3,874	Rotating	6	12	July	No	Req	40	$20
Passavant Memorial Hospital	Chicago	NPAssn	212	10	2	88	4,230	Mixed	6	12	(1-d)	No	Req	61	No
Presbyterian Hospital [1]	Chicago	Church	425	24	47	29	11,503	Mix&Str	27	12&16	(1-b)	No	Op	57	No
Provident Hospital [1] (col.)	Chicago	NPAssn	155	18	7	75	2,791	Rotating	6	12	July & Sept.	No	Req	43	$10
Ravenswood Hospital	Chicago	NPAssn	188	5	20	75	5,943	Rotating	7	12	July	No	Op	22	$10
Research and Educational Hospital [1]	Chicago	State	383	100			5,848	Rotating	12	18	Jan. & July	No	Op	96	No
Rosalind Community Hospital	Chicago	Corp	136	10	20	70	3,302	Rotating	4	12	July	No	Req	38	$15
St. Anne's Hospital	Chicago	Church	200	8	42	50	5,304	Rotating	8	12	July	No	Req	26	No
St. Bernard's Hospital	Chicago	Church	215	16	15	69	6,658	Rotating	6	12	July	No	None	20	No
St. Elizabeth Hospital	Chicago	Church	223	10	26	64	5,049	Rotating	7	12	July	No	Req	28	No
St. Joseph Hospital	Chicago	Church	250	8	36	56	3,324	Rotating	7	12	Apr. & July	No	Req	25	No
St. Luke's Hospital	Chicago	NPAssn	663	6	5	89	11,661	Rotating	24	12	(1-e)	No	Req	40	No
St. Mary of Nazareth Hospital	Chicago	Church	250	11	4	85	5,216	Rotating	6	12	July	No	None	19	No
Swedish Covenant Hospital	Chicago	Church	200	2	13	85	5,861	Rotating	6	12	July	No	None	19	$30
U. S. Marine Hospital	Chicago	USPHS	277	100			1,875	Rotating	6	12	July	(21)	Op	41	(b)
University Hospital	Chicago	Corp	121	5	4	91	2,544	Rotating	3	12	July	No	Req	31	$15
University of Chicago Clinics [1]	Chicago	NPAssn	351	17	67	16	7,640	Straight	27	12	Jan. & July	No	Req	70	No
Washington Boulevard Hospital	Chicago	NPAssn	110	10	20	70	1,979	Mixed	6	18	(1-f)	No	Req	33	No
Wesley Memorial Hospital [1]	Chicago	Church	268	34	12	54	3,054	Rotating	8	12	Jan. & July	No	None	51	No
Women and Children's Hospital [2]	Chicago	NPAssn	125	15	25	60	2,423	Rotating	6	12	Jan. & July	No	Req	53	No
Woodlawn Hospital	Chicago	NPAssn	102	1	68	31	2,982	Mixed	4	12	Jan. & July	No	None	38	$25

Numerical and other references will be found on page 692.

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1937

Name of Hospital	Location	Control	Capacity	Classification of Patients Percentage: Free	Part Pay	Full Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
ILLINOIS—Continued															
St. Mary's Hospital	East St. Louis	Church	295	11	41	48	4,143	Rotating	5	12	July	No	None	23	$25
Evanston Hospital	Evanston	NPAssn	200	6	45	49	7,274	Rotating	16	16	(1-b)	No	Req	68	No
St. Francis Hospital	Evanston	Church	253	7	54	39	6,698	Mixed	8	12	July	No	None	35	$25
Little Company of Mary Hospital	Evergreen Park	Church	161	4	21	75	5,022	Rotating	4	12	July	No	None	21	$25
St. Joseph's Hospital	Joliet	Church	226	11	9	80	4,715	Rotating	4	12	July	No	None	15	$25
Oak Park Hospital [1]	Oak Park	Church	165	3	6	91	4,049	Rotating	6	12	July	No	Req	16	No
West Suburban Hospital	Oak Park	NPAssn	427	7	19	74	7,574	Rotating	10	12	(1-g)	No	Req	27	No
St. Francis Hospital	Peoria	Church	363	5	23	72	8,597	Mixed	6	12	Jan. & July	(22)	None	21	$20
St. Mary Hospital	Quincy	Church	215	44	40	16	3,782	Rotating	3	12	July	No	None	19	$25
St. Anthony's Hospital	Rock Island	Church	168	25	40	35	2,080	Mixed	2	12	July	No	Op	27	$25
INDIANA															
St. Catherine's Hospital	East Chicago	Church	250	1	17	82	4,200	Rotating	7	12	July	No	Req	17	$25
Lutheran Hospital	Fort Wayne	Church	165	10	10	80	5,017	Mixed	3	12	July	No	None	18	$25(l)
St. Joseph Hospital	Fort Wayne	Church	295	8	32	60	4,452	Rotating	5	12	July	No	None	19	$25
St. Mary's Mercy Hospital	Gary	Church	300	3	19	78	5,800	Rotating	6	12	June & July	No	None	17	$25
St. Margaret's Hospital	Hammond	Church	250	3	74	23	4,523	Rotating	8	12	July & Sept.	No	Req	21	$30
Indianapolis City Hospital	Indianapolis	City	577	*	*	*	10,131	Rotating	33	12	July	No	Req	52	$10.83
Indiana University Hospitals [1]	Indianapolis	State	585	83	3	14	9,425	Rotating	23	12	July	No	Req	50	$12.50
Methodist Episcopal Hospital	Indianapolis	Church	548	10	15	75	19,505	Rotating	18	12	July	No	Op	25	$10
St. Vincent's Hospital	Indianapolis	Church	295	16	18	66	5,394	Rotating	9	12	July	No	None	18	$15
St. Elizabeth Hospital	La Fayette	Church	245	21	63	16	4,069	Rotating	4	12	July	No	None	19	$20
Ball Memorial Hospital [1]	Muncie	NPAssn	362	*			6,000	Rotating	6	12	July	No	None	45	$30
Epworth Hospital	South Bend	NPAssn	192	13		87	4,018	Mixed	3	12	July	No	Req	23	$15
St. Joseph's Hospital	South Bend	Church	147	45	20	35	2,646	Mixed	2	12	July	No	Req	20	$25(n)
IOWA															
Mercy Hospital [1]	Cedar Rapids	Church	171	11	34	55	2,592	Mixed	2	12	July	No	Req	18	$25
St. Luke's Methodist Hospital	Cedar Rapids	Church	150	20	52	28	3,201	Mixed	2	12	July	No	Req	26	$25
Jennie Edmundson Memorial Hospital	Council Bluffs	NPAssn	131	2		98	1,500	Mixed	2	12	July	No	Op	27	$30
Mercy Hospital [1]	Council Bluffs	Church	159	5	73	22	2,980	Rotating	4	12	June	No	None	19	$25
Mercy Hospital [1]	Davenport	Church	145	12	15	73	2,706	Rotating	2	12	July	No	None	20	$25
Broadlawns, Polk County Public Hosp.	Des Moines	County	116	98	..	..	4,049	Rotating	7	12	July	No	Req	58	$25
Iowa Lutheran Hospital [1]	Des Moines	Church	145	1	5	90	5,059	Rotating	3	12	July	No	None	17	$25(o)
Iowa Methodist Hospital	Des Moines	Church	279	5	17	78	7,142	Rotating	8	12	July	No	Op	15	$30(l)
Mercy Hospital	Des Moines	Church	185	4	3	93	4,220	Rotating	5	12	July	No	None	25	$25
University Hospitals [1]	Iowa City	State	954	87	8	5	18,438	Rotating	19	12	July	No	Req	61	$100 yr.
St. Joseph Mercy Hospital	Sioux City	Church	278	24	20	56	4,140	Rotating	4	12	July	No	Req	23	$25
KANSAS															
Bethany Methodist Hospital [1]	Kansas City	Church	145	9	12	79	3,152	Rotating	3	12	July	No	None	47	$25
Providence Hospital	Kansas City	Church	115	20	40	40	2,651	Mixed	2	12	July	No	None	34	$20
St. Margaret's Hospital	Kansas City	Church	272	33	65	2	4,076	Rotating	6	12	July	No	Req	30	$25
University of Kansas Hospitals [1]	Kansas City	State	322	50	46	4	5,658	Rotating	9	12	July	(23)	Req	79	$15
St. Francis Hospital	Wichita	Church	200	15	25	60	5,696	Rotating	6	12	July	(24)	Req	29	$40
Wesley Hospital	Wichita	Church	256	3	8	89	5,349	Rotating	6	12	July	(25)	Req	20	$25
Wichita Hospital	Wichita	Church	115	25	26	49	2,376	Mixed	2	12	July	No	Req	24	$40
KENTUCKY															
St. Elizabeth Hospital	Covington	Church	316	50	50	50	5,252	Mixed	6	12	July	No	Req	16	$25
Good Samaritan Hospital	Lexington	Church	216	37	14	49	5,914	Rotating	5	12	July	No	Req	34	$25
St. Joseph's Hospital [1]	Lexington	Church	221	3	23	74	6,264	Rotating	5	12	July	(26)	Req	24	$25
Kentucky Baptist Hospital	Louisville	Church	150	41	37	22	3,200	Rotating	3	12	July	(27)	None	16	$25&25
Louisville City Hospital [1]	Louisville	City	586	90	10		10,643	Rotating	18	12	July	(28)	Req	22	$9.25
Norton Memorial Infirmary	Louisville	NPAssn	150	10	60	30	3,174	Mixed	5	12	July	(27)	Op	24	$30
St. Anthony's Hospital	Louisville	Church	157	7	64	29	2,458	Mixed	3	12	July	No	None	16	$25
St. Joseph Infirmary	Louisville	Church	250	21	12	60	6,152	Mixed	3	12	July	No	None	19	$25
SS. Mary and Elizabeth Hospital	Louisville	Church	155	..	..	..	3,241	Mixed	2	12	July	No	None	18	$40
LOUISIANA															
Charity Hospital [1]	New Orleans	State	1,955	100			65,809	Rotat & Str	75	12&24	July	No	Op	51	No
Flint Goodridge Hospital of Dillard University [1] (col.)	New Orleans	NPAssn	100	39	15	46	1,498	Rotating	4	12	July	No	Req	22	$10
Hotel Dieu Hospital	New Orleans	Church	257	6	19	75	8,267	Rotating	8	12	July	No	None	19	$25
Mercy Hospital & Sanitarium Memorial	New Orleans	Church	150	9	6	85	2,721	Rotating	4	12	July	No	Req	17	$25
Southern Baptist Hospital [1]	New Orleans	Church	222	10	22	68	8,672	Rotating	9	12	July	No	None	18	$15(e)
Touro Infirmary [1]	New Orleans	NPAssn	360	32	40	28	10,050	Rotating	17	12	July	No	Req	54	$10
U. S. Marine Hospital	New Orleans	USPHS	572	100			4,030	Rotating	12	12	July	(30)	Op	50	(b)
T. E. Schumpert Memorial Sanitarium	Shreveport	Church	162	25	50	25	2,950	Mixed	2	12	July	No	None	26	$50
Shreveport Charity Hospital	Shreveport	State	840	100			22,801	Rotating	20	12	July	No	None	33	$10
MAINE															
Eastern Maine General Hospital	Bangor	NPAssn	173	21	19	60	4,119	Rotating	3	12	July	No	Req	21	$25
Central Maine General Hospital [1]	Lewiston	NPAssn	210	30	30	50	3,766	Rotating	3	12	July	No	Op	44	No
St. Mary's General Hospital	Lewiston	NPAssn	162	40	13	47	2,818	Mixed	2	12	July	No	Req	34	$30
Maine General Hospital	Portland	NPAssn	291	42	36	22	5,472	Mixed	9	18	Apr. & Oct.	No	Req	30	No
MARYLAND															
Baltimore City Hospitals [1]	Baltimore	City	1,340	100			7,305	Rotat & Str	45	12	July	No	Req	43	No
Bon Secours Hospital	Baltimore	Church	143	25	12	63	2,668	Rotating	3	12	July	(31)	Req	44	$25
Church Home and Infirmary [1]	Baltimore	Church	300	30	54	16	2,738	Rotat & Str	7	12	July	No	Req	46	$15
Franklin Square Hospital	Baltimore	NPAssn	200	70	15	15	1,985	Mixed	5	12	July	No	None	26	$12.50(o)
Hospital for Women [1]	Baltimore	NPAssn	128	21	43	36	2,110	Mixed	5	12	July	(32)	Req	28	No
Johns Hopkins Hospital [1]	Baltimore	NPAssn	925	49	11	40	14,401	Straight	58	12	July & Sept.	No	Req	87	No
Maryland General Hospital	Baltimore	Church	200	44	12	44	4,313	Rotating	8	12	July	No	Req	16	$30
Mercy Hospital	Baltimore	Church	240	51	33	16	5,002	Rotating	9	12	July	No	Req	24	No
Provident Hosp. and Free Disp. (col.)	Baltimore	NPAssn	133	79	2	19	2,055	Rotating	8	12	July & Oct.	No	Req	19	No
St. Agnes' Hospital	Baltimore	Church	216	38	35	27	3,828	Rotating	9	12	July	(31)	Req	15	No
St. Joseph's Hospital	Baltimore	Church	200	42	11	47	4,977	Rotating	6	12	July	No	Req	38	$15
Sinai Hospital [1]	Baltimore	Church	283	38	10	52	5,245	Str & Mix	10	12	July	No	Req	31	No
South Baltimore General Hospital	Baltimore	NPAssn	125	44	30	26	2,976	Rotating	6	12	July	No	Req	41	$20
Union Memorial Hospital	Baltimore	NPAssn	331	21	46	33	5,651	Rotating	15	12	July	No	Req	40	No
U. S. Marine Hospital	Baltimore	USPHS	439	100			3,369	Rotating	12	12	July	(33)	Req	70	(b)
University Hospital [1]	Baltimore	State	443	47	19	34	8,363	Rotating	24	24	July	No	Req	44	No
West Baltimore General Hospital	Baltimore	Corp	200	33	1	66	2,751	Rotating	5	12	July	(34)	Req	17	$15
MASSACHUSETTS															
Beverly Hospital	Beverly	NPAssn	141	4	65	31	3,578	Mixed	3	12	(1-h)	No	Req	63	No
Beth Israel Hospital	Boston	NPAssn	220	39	12	49	5,847	Straight	15	12½&24½	(1-i)	No	Req	47	No
Boston City Hospital [1]	Boston	City	1,770	94	5	1	40,120	Straight	92	12-24	Varies	No	Req	31	No
Carney Hospital	Boston	Church	102	5	86	9	5,851	Straight	12	12&30	(1-j)	No	Req	30	No

Numerical and other references will be found on page 692.

Name of Hospital	Location	Control	Capacity	Classification of Patients Percentage: Free	Part Pay	Full Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
MASSACHUSETTS—Continued															
Faulkner Hospital	Boston	NPAssn	165	14	64	22	3,743	Mixed	2	12	June	No	Req	43	No
Massachusetts General Hospital [1]	Boston	NPAssn	424	48	34	18	7,951	Straight	34	12-25	(1-f)	No	Req	50	No
Massachusetts Memorial Hospitals [2]	Boston	NPAssn	437	27	41	32	6,992	Rotat&Str	12	16&24	(1-m)	No	Req	54	No
New England Hospital for Women and Children,[2] Roxbury	Boston	NPAssn	260	4	1	95	4,488	Rotating	8	12	July & Oct.	No	Req	33	No
Peter Bent Brigham Hospital	Boston	NPAssn	247	57		43	4,712	Straight	24	12-29	(1-n)	(35)	Req	60	No
St. Elizabeth's Hospital, Brighton	Boston	Church	260	20	30	50	4,326	Mixed	7	24	(1-f)	No	Req	17	No
Brockton Hospital	Brockton	NPAssn	154	13	56	31	2,718	Rotating	4	12	June & Aug.	No	Op	18	$10(j)
Cambridge City Hospital	Cambridge	City	232	65	5	30	5,400	Rotating	14	22-24	(1-b)	No	Req	29	No
Cambridge Hospital	Cambridge	NPAssn	295	21	56	23	5,097	Rotating	4	18	(1-f)	(36)	Req	29	No
U. S. Naval Hospital	Chelsea	Govt	400				2,000	Rotating		12-16	July		None	33	(b)
Union Hospital	Fall River	NPAssn	302	5	42	53	5,244	Mixed	3	12	July	No	Req	21	$30-50
Burbank Hospital	Fitchburg	Corp	215	37	1	62	3,902	Rotating	4	12	July & Oct.	No	Req	18	$25
Lawrence General Hospital	Lawrence	NPAssn	150	23	2	75	3,219	Rotating	2	12	June	No	Req	33	$10
Lowell General Hospital	Lowell	NPAssn	190	7	60	33	4,606	Rotating	2	12	July	No	Req	27	$25
St. John's Hospital	Lowell	Church	173	3	57	40	3,275	Rotating	4	12	June	No	Req	24	No
St. Joseph's Hospital	Lowell	Church	122	6	61	33	3,108	Rotating	2	12	July	No	Req	36	$10
Lynn Hospital	Lynn	NPAssn	205	16	31	53	3,661	Rotating	4	12	June & July	No	Req	25	$10(p)
St. Luke's Hospital	New Bedford	NPAssn	339	10	44	46	6,634	Rotating	6	12	July	No	Req	39	No
Newton Hospital	Newton	NPAssn	244	25	46	29	5,361	Rotating	6	12	June	No	Req	33	No
Quincy City Hospital	Quincy	City	240	8	9	83	6,247	Rotating	6	12	Jan. & July	No	Op	36	(j)
Salem Hospital	Salem	NPAssn	185	20	49	31	4,100	Rotating	4	12	(1-o)	No	Req	29	$25
Mercy Hospital	Springfield	Church	365	28	14	58	6,630	Rotating	6	12	July	No	Req	17	$25
Springfield Hospital	Springfield	NPAssn	265	8	77	15	5,547	Rotating	9	18	Jan. & July	(37)	Req	20	No
Wesson Memorial Hospital	Springfield	NPAssn	125	2	27	71	2,667	Rotating	5	18	Jan. & July	(37)	Req	25	$25
Waltham Hospital	Waltham	NPAssn	216	4	64	32	3,183	Rotating	3	12	July	No	Req	25	$15(j)
Memorial Hospital	Worcester	NPAssn	335	5	8	87	5,774	Rotating	9	18	(1-h)	No	Req	35	No
St. Vincent Hospital	Worcester	Church	250	10	2	88	6,154	Rotating	5	15	(1-f)	No	Req	25	$30
Worcester City Hospital	Worcester	City	540	61	19	20	9,270	Rotating	18	24	(1-p)	No	Req	39	No
Worcester Hahnemann Hospital	Worcester	NPAssn	140	3	71	26	2,304	Rotating	3	12	July	No	None	42	$35
MICHIGAN															
St. Joseph's Mercy Hospital	Ann Arbor	Church	140	29	29	42	2,723	Rotating	3	12	July	(38)	Req	56	$25
University Hospital [1]	Ann Arbor	State	1,785	79		21	22,515	Rotat&Mix	33	12	July	No	Req	57	No
Leila Y. Post Montgomery Hospital	Battle Creek	City	175				3,896	Rotating	3	12	July	No	Req	29	$25
Mercy Hospital	Bay City	Church	160	21	30	59	4,237	Rotating	3	12	July	No	None	23	$25
City of Detroit Receiving Hospital [1]	Detroit	City	670	100			21,917	Rotating	25	12	July	(39)	Req	40	$25
Evangelical Deaconess Hospital	Detroit	Church	135	2	37	61	3,571	Rotating	4	12	July	No	Req	16	$15
Grace Hospital [1]	Detroit	NPAssn	538	31	39	30	13,629	Rotating	24	12	July & Sept.	(39)	Req	22	$25
Harper Hospital	Detroit	NPAssn	730	11		89	17,217	Rotating	28	12	July	(40)	Req	18	No
Henry Ford Hospital	Detroit	NPAssn	608	34		66	11,979	Rotating	25	12	Sept.	No	Op	46	$100(a)
Providence Hospital	Detroit	Church	469	12	76	12	11,967	Rotating	17	12	July	(41)	None	21	$30
St. Joseph's Mercy Hospital	Detroit	Church	245	2	19	79	5,415	Rotating	6	12	July	No	Req	25	$25
St. Mary's Hospital	Detroit	Church	336	28	25	47	6,556	Rotating	12	12	July	No	Req	22	$30
Eloise Hospital [1] (Dr. William J. Seymour Hospital)	Eloise	County	1,450	100			5,661	Mixed	15	12	July	(39)	Req	41	$25
Hurley Hospital [1]	Flint	City	467	60		40	9,282	Rotating	14	12	July	No	None	41	$25
Blodgett Memorial Hospital [1]	Grand Rapids	NPAssn	150	20	60	20	3,259	Mixed	4	12	July	(42)	None	51	No
Butterworth Hospital	Grand Rapids	NPAssn	272	15	50	35	4,667	Rotating	6	12	July	No	None	37	$30
St. Mary's Hospital	Grand Rapids	Church	253	30	16	54	6,010	Rotating	6	12	July	No	Req	23	(l)
Highland Park General Hospital	Highland Park	City	160	11		89	4,052	Rotating	6	12	July & Sept.	No	Req	23	$15
W. A. Foote Memorial Hospital	Jackson	City	156	2	39	59	5,255	Rotating	4	12	July	No	Req	30	$22
Mercy Hospital	Jackson	Church	140				2,918	Mixed	3	12	July	No	None	17	$30
Edward W. Sparrow Hospital [1]	Lansing	NPAssn	150	2	56	42	4,008	Mixed	2	12	July	No	Req	21	$50
St. Lawrence Hospital	Lansing	Church	178	10	18	72	5,611	Rotating	3	12	July	(43)	Op	48	$40
Hackley Hospital	Muskegon	NPAssn	125	8	80	12	2,492	Rotating	3	12	July	No	None	21	$25
Mercy Hospital	Muskegon	Church	125	21	54	25	3,900	Rotating	2	12	Jan. & July	No	None	22	$25
St. Joseph Mercy Hospital	Pontiac	Church	175	5	20	75	3,296	Mixed	3	12	July	No	Req	40	$25
Saginaw General Hospital	Saginaw	NPAssn	132	11	5	84	2,990	Rotating	4	12	July	No	Req	27	$50
St. Mary's Hospital	Saginaw	Church	176	6	29	65	3,484	Mixed	3	12	July	No	Req	25	$45
MINNESOTA															
St. Luke's Hospital	Duluth	NPAssn	270	20	45	35	5,744	Rotating	8	12	July	(44)	Req	73	$12.50
St. Mary's Hospital	Duluth	Church	250	20	35	45	5,633	Rotating	7	12	July	(45)	Req	73	$12.50
Asbury Hospital [1]	Minneapolis	Church	140	10		90	3,302	Rotating	4	12	(1-e)	No	None	37	$25
Fairview Hospital	Minneapolis	Church	225	3	7	90	3,886	Rotating	4	12	Jan. & July	(46)	Req	22	$25
Minneapolis General Hospital [1]	Minneapolis	City	681	100			12,756	Rotat&Str	54	18	Apr. & Oct.	No	Req	38	No
Northwestern Hospital [1]	Minneapolis	NPAssn	185	10	15	75	6,695	Rotating	4	12	July	No	Op	41	$25(i)
St. Barnabas Hospital	Minneapolis	NPAssn	146	2	1	97	4,067	Mixed	3	12	July	No	None	40	$25
St. Mary's Hospital [1]	Minneapolis	Church	250	9	32	59	5,754	Rotating	5	12	July	No	Op	30	$15(j)
Swedish Hospital	Minneapolis	NPAssn	267	4	6	90	5,676	Rotating	4	12	(1-e)	No	Req	15	$25
University Hospitals [1]	Minneapolis	State	450	16	54	30	8,872	Rotat&Str	24	12&24	July	(47)	Req	70	No
Ancker Hospital	St. Paul	CyCo	900	98	1	1	10,753	Rotating	32	12	July	No	Req	63	No
Bethesda Hospital	St. Paul	Church	137	1	3	96	3,788	Rotating	3	12	July	No	None	29	$25
Charles T. Miller Hospital	St. Paul	NPAssn	225	28	34	38	5,017	Rotating	7	12	July	(48)	Req	51	No
Northern Pacific Beneficial Association Hospital	St. Paul	NPAssn	150			100	2,240	Mixed	2	12	July	No	Req	59	$25
St. Joseph's Hospital [1]	St. Paul	Church	220	7	7	86	6,672	Rotating	6	12	July	(49)	None	28	$25
MISSOURI															
St. Louis County Hospital	Clayton	County	226	98	1	1	4,202	Rotating	10	12	July	No	Req	41	$25-50
Kansas City General Hospital	Kansas City	City	450	100			10,130	Rotating	24	12	July	No	Req	91	$20
Kansas City General Hospital No. 2 (col.)	Kansas City	City	274	100			3,158	Rotating	12	12	July	No	Req	66	$17.50
Menorah Hospital	Kansas City	NPAssn	143	4	26	70	3,393	Rotating	7	12	July	No	Req	47	$25
Research Hospital	Kansas City	NPAssn	225	3		97	5,346	Rotating	6	12	July	No	None	63	$25
St. Joseph Hospital	Kansas City	Church	236	18	17	65	4,739	Mixed	6	12	July	No	None	71	$25
St. Luke's Hospital	Kansas City	Church	230	6	23	71	4,545	Mixed	6	12	July	No	None	83	$25
St. Mary's Hospital	Kansas City	Church	175	16	17	67	4,468	Rotating	5	12	July	No	None	61	$25
Trinity Lutheran Hospital	Kansas City	Church	136	1	10	89	2,525	Rotating	4	12	July	No	None	54	$25(o)
Missouri Methodist Hospital	St. Joseph	Church	140	2	20	78	3,783	Mixed	4	12	July	No	None	35	$30
St. Joseph's Hospital	St. Joseph	Church	180	5	48	47	2,956	Rotating	2	12	July	No	None	53	$30
Barnes Hospital	St. Louis	Church	350	17	8	75	9,483	Straight	35	12&18	Jan. & July	(51)	Op	65	No
Christian Hospital	St. Louis	NPAssn	115	5	9	86	1,725	Rotating	3	12	July	No	None	18	$12.50(j)
De Paul Hospital	St. Louis	Church	285	25	35	40	7,338	Rotating	7	12	July	No	Req	31	$25
Evangelical Deaconess Home and Hosp.	St. Louis	Church	195	12	16	72	4,631	Rotating	7	12	July	No	None	15	$25(l)
Jewish Hospital	St. Louis	NPAssn	283	31	49	20	5,518	Rotating	12	12	July	(52)	Req	33	$15
Lutheran Hospital	St. Louis	Church	180	3	26	71	5,681	Rotating	3	12	July	No	None	36	$25

Numerical and other references will be found on page 692.

V 10
193

Name of Hospital	Location	Control	Capacity	Classification of Patients Percentage: Free	Part Pay	Full Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Courtesies	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
MISSOURI—Continued															
Missouri Baptist Hospital	St. Louis	Church	500	12	10	78	4,886	Mixed	8	12	July	No	None	39	$25
St. Anthony's Hospital	St. Louis	Church	200	11	13	76	4,083	Rotating	6	12	July	No	Op	22	$25
St. John's Hospital	St. Louis	Church	315	18	3	79	5,556	Rotating	12	12	July	No	Req	19	$30
St. Louis City Hospital	St. Louis	City	806	100			20,506	Rotating	60	12	July	(53)	Req	37	$10(h)
St. Louis City Hospital No. 2 (col.)	St. Louis	City	225	100			7,069	Rotating	28	12	July	No	Req	47	$10(h)
St. Luke's Hospital	St. Louis	Church	210	14	28	58	4,682	Rotating	9	12	July	(54)	Req	28	$20
St. Mary's Group of Hospitals	St. Louis	Church	706	49	29	22	10,240	Rotating	36	12	July	(55)	Req	46	No
St. Mary's Infirmary (col.)	St. Louis	Church	170	5	85	10	2,229	Rotating	6	12	July	No	None	39	$8(q)
MONTANA															
Murray Hospital	Butte	Corp	152			100	2,148	Mixed	2	12	Jan. & July	No	Req	39	$50
St. James Hospital	Butte	Church	176	21	25	54	2,683	Rotating	2	12	July	No	Req	25	$50
NEBRASKA															
Bryan Memorial Hospital [1]	Lincoln	Church	114		6	94	2,353	Mixed	2	12	July	No	None	33	$25
Lincoln General Hospital	Lincoln	City	172	10	50	40	2,971	Mixed	3	12	July	No	Op	28	$25
St. Elizabeth's Hospital	Lincoln	Church	200	15	64	21	4,250	Mixed	2	12	July	No	None	18	$35
Bishop Clarkson Memorial Hospital	Omaha	Church	175	5	60	35	2,408	Rotating	3	12	July	No	None	42	$25
Creighton Memorial St. Joseph's Hosp.	Omaha	Church	305	14	71	15	7,340	Rotating	10	12	July	No	Req	36	$20(c)
Evangelical Covenant Hospital	Omaha	Church	102	2	59	39	2,856	Mixed	3	12	June	No	Req	25	$35
Immanuel Deaconess Institute	Omaha	Church	142	2	13	85	4,019	Rotating	4	12	June	No	None	29	$20(j)
Nebraska Methodist Episcopal Hospital	Omaha	Church	300	7	23	70	4,172	Rotating	5	12	July	No	None	19	$25
St. Catherine's Hospital	Omaha	Church	175	8	10	82	5,674	Rotating	4	12	July	No	None	19	$25
University of Nebraska Hospital	Omaha	State	230	95	5		3,760	Rotating	12	12	July	No	Req	50	$25
NEW HAMPSHIRE															
Mary Hitchcock Memorial Hospital	Hanover	NPAssn	142	16		84	3,768	Rotating	4	12	Jan. & July	No	Req	76	$100yr.
NEW JERSEY															
Atlantic City Hospital	Atlantic City	NPAssn	316	45	22	33	6,468	Rotating	8	12	July	No	Req	48	$25
Bayonne Hospital and Dispensary	Bayonne	NPAssn	225	75	5	20	4,028	Rotating	6	15	(1-f)	No	Req	22	$25
Cooper Hospital	Camden	NPAssn	366	48	22	30	7,954	Rotating	12	12	July	No	Req	37	$10
West Jersey Homeopathic Hospital	Camden	NPAssn	258	38	31	41	5,384	Rotating	7	12	June	No	Req	66	$10
Homeopathic Hospital of Essex County	East Orange	NPAssn	130	15	54	30	2,836	Rotating	3	12	July	No	Req	35	$25
Alexian Bros. Hosp. (male patients only)	Elizabeth	Church	162	43	6	51	2,000	Rotating	3	12	July	(56)	Req	24	$50
Elizabeth General Hosp. and Dispensary	Elizabeth	NPAssn	220	23		77	5,575	Rotating	9	12	July	No	Req	56	$15
Englewood Hospital [1]	Englewood	NPAssn	248	55	35	12	5,228	Rotating	8	12&18	Jan. & July	No	Req	35	$30
Hackensack Hospital	Hackensack	NPAssn	255	62	21	17	6,481	Rotating	9	24	Jan. & July	(57)	Req	16	$25
St. Mary Hospital	Hoboken	Church	450	62	33	5	5,116	Rotating	9	12	July	No	Req	21	$25
Christ Hospital [1]	Jersey City	Church	206	10	20	70	4,107	Rotating	8	18	July & Oct.	No	Req	23	$25
Medical Center of Jersey City [1]	Jersey City	City	1,200	90	7	3	19,554	Rotating	62	12-24	Jan. & July	(58)	Req	19	No
St. Francis Hospital	Jersey City	Church	254	28	32	40	3,659	Rotating	8	24	July	(55)	Req	17	No
Monmouth Memorial Hospital	Long Branch	NPAssn	207	60	15	25	4,749	Rotating	9	18	Jan. & July	(60)	Op	20	$15
Mountainside Hospital	Montclair	NPAssn	350	8	44	48	5,456	Rotating	9	18	Jan. & July	No	Req	35	$25
All Souls Hospital	Morristown	Church	134	40	5	55	1,963	Rotating	3	12	July & Sept.	No	Req	30	$25
Morristown Memorial Hospital [1]	Morristown	NPAssn	155	56	6	38	2,380	Rotating	4	12	(1-q)	No	Req	31	$40
Mount Carmel Guild Hospital	Newark	NPAssn	111	33	27	40	2,870	Rotating	4	12	July	(61)	Req	51	$25
Fitkin Memorial Hospital [1]	Neptune	NPAssn	178	52	14	34	4,283	Rotating	6	12	Jan. & July	No	Req	25	$25
Hospital of St. Barnabas and for Women and Children	Newark	Church	274	14	8	78	4,483	Rotating	3	12	July	No	Req	17	$45
Newark Beth Israel Hospital	Newark	NPAssn	427	9	30	61	10,181	Rotating	18	18	Jan. & July	No	Req	53	$15
Newark City Hospital [1]	Newark	City	700	100			16,108	Rotating	24	24	(1-f)	No	Req	39	$15-20
Newark Memorial Hospital	Newark	NPAssn	161	6	59	35	2,600	Rotating	4	12	July	No	Req	22	$25
St. Michael's Hospital	Newark	Church	317	21	26	53	4,527	Rotating	7	15	July & Sept.	(59)	Req	42	$30
St. Peter's General Hospital	New Brunswick	Church	212	32	28	40	4,211	Rotating	4	12	July & Sept.	No	Req	19	$120yr.
Orange Memorial Hospital	Orange	NPAssn	400	33	17	55	7,147	Rotating	8	12	July	No	Req	25	$25
Passaic General Hospital [1]	Passaic	NPAssn	200	55	15	30	4,139	Rotating	4	12	June & July	No	Req	30	$25
Nathan and Miriam Barnert Memorial Hospital	Paterson	NPAssn	118	33	24	43	3,000	Rotating	5	12	July & Sept.	No	Req	27	$15-30
Paterson General Hospital	Paterson	NPAssn	336	37	4	59	6,473	Rotating	7	18	Jan. & July	No	Op	19	$12.50(r)
St. Joseph's Hospital	Paterson	Church	458	50	12	38	6,473	Rotating	8	24	July	No	Req	30	$12.50-25
Muhlenberg Hospital	Plainfield	NPAssn	274	39	16	45	5,724	Rotating	6	12	July	No	Req	24	$25
Holy Name Hospital	Teaneck	Church	230	50	20	30	4,163	Rotating	6	12	July	(57)	Req	30	$40
Mercer Hospital	Trenton	NPAssn	250	48	2	50	4,538	Rotating	6	12	July	No	Req	18	$25
St. Francis Hospital	Trenton	Church	217	42	20	19	4,460	Rotating	8	12	July	No	Req	24	$25
William McKinley Memorial Hospital	Trenton	NPAssn	146	35	8	57	2,863	Rotating	4	12	July	No	Req	27	$25
North Hudson Hospital [1]	Weehawken	NPAssn	191	12	54	34	3,545	Rotating	8	12	Jan. & July	(59)	Req	21	$25
NEW YORK															
Albany Hospital [1]	Albany	NPAssn	630	60	15	25	10,456	Rotating	20	12	July	No	Req	71	No
Memorial Hospital	Albany	NPAssn	156	1	29	70	2,609	Rotating	5	12	July & Sept.	No	Req	45	$25
St. Peter's Hospital	Albany	Church	151	33	4	63	3,250	Rotating	5	12	July	(62)	Req	20	$40
Binghamton City Hospital	Binghamton	City	250	55		45	10,107	Rotating	10	24	July	No	Op	24	(k)
Beth El Hospital	Brooklyn	NPAssn	238	36	15	49	6,356	Rotating	21	12&24	Jan. & July	No	Op	25	No
Beth Moses Hospital	Brooklyn	NPAssn	224	41	4	55	5,307	Rotating	17	24	Jan. & July	No	Req	19	No
Brooklyn Hospital	Brooklyn	NPAssn	429	43	10	47	7,702	Rotating	16	24	July	No	Op	38	No
Bushwick Hospital	Brooklyn	NPAssn	150	1	17	82	2,875	Rotating	8	24	July	No	Req	15	No
Caledonian Hospital [1]	Brooklyn	NPAssn	150	4	55	41	3,705	Rotating	3	12	July	No	Req	23	$25
Coney Island Hospital [1]	Brooklyn	City	400	100			9,460	Rotating	20	24	July	No	Req	31	$15
Cumberland Hospital	Brooklyn	City	318	100			8,006	Rotating	24	24	July	No	Op	53	$15
Greenpoint Hospital	Brooklyn	City	230	100			7,240	Rotating	16	24	July	No	Req	25	$15
Israel-Zion Hospital	Brooklyn	NPAssn	450	28	6	56	9,288	Rotating	30	12&24	July	(63)	Req	33	No
Jewish Hospital [1]	Brooklyn	NPAssn	668	32	41	27	15,337	Rotating	42	12-18	Jan. & July	(63)	Req	34	No
Kings County Hospital	Brooklyn	City	2,950	100			54,761	Rotat.&Str	103	12&24	July	No	Req	16	$15
Long Island College Hospital	Brooklyn	NPAssn	473	20	34	46	9,039	Rotat.&Str	20	12	July	No	Req	41	No
Methodist Episcopal Hospital	Brooklyn	Church	484	36	2	62	9,413	Rotating	14	24	July	No	Req	33	No
Norwegian Lutheran Deaconess' Home and Hospital [1]	Brooklyn	Church	200	12	37	51	4,326	Rotating	10	12	July	No	Req	34	No
St. Catherine's Hospital	Brooklyn	Church	313	7	71	22	5,817	Rotating	16	24	July	No	Req	26	No
St. John's Hospital	Brooklyn	Church	234	55	6	39	4,908	Rotating	12	36	July	No	Req	43	No
St. Mary's Hospital	Brooklyn	Church	200	52	20	28	4,650	Rotating	8	24	July	No	Req	17	No
St. Peter's Hospital	Brooklyn	Church	224	23	54	23	2,527	Rotating	6	12	July	No	None	18	No
Trinity Hospital	Brooklyn	NPAssn	125	70	26	4	3,084	Rotating	16	24	July	No	Req	33	No
U. S. Naval Hospital	Brooklyn	Navy	484	100			2,223	Rotating	..	12	July	...	None	62	(b)
Wyckoff Heights Hospital	Brooklyn	NPAssn	300	29	22	39	5,089	Rotating	12	24	(1-r)	No	Req	15	No
Buffalo City Hospital [1]	Buffalo	City	1,063	67	30	3	11,130	Rotating	30	12	July	No	Req	32	$50(a)
Buffalo General Hospital	Buffalo	NPAssn	465	10	46	44	10,166	Rotating	14	12	July	(64)	Req	41	No
Buffalo Hospital of the Sisters of Charity	Buffalo	Church	244	5	75	20	4,026	Rotating	12	12	July	(29)	None	15	$25

Numerical and other references will be found on page 692.

Name of Hospital	Location	Control	Capacity	Classification of Patients Percentage: Free	Part Pay	Full Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
NEW YORK—Continued															
Twarcness Hospital	Buffalo	NPAssn	225	1	40	59	6,658	Rotating	6	12	July	No	Op	28	$25
Mercy Hospital	Buffalo	Church	198	3	33	64	3,746	Rotating	6	12	July	No	Req	17	$30
Millard Fillmore Hospital	Buffalo	NPAssn	309	22	46	32	6,183	Rotating	7	12	July	No	Req	45	$15
Mary Imogene Bassett Hospital	Cooperstown	NPAssn	95	..	..	..	1,491	Rotating	4	15	July	No	None	70	$30
Arnot-Ogden Memorial Hospital	Elmira	NPAssn	213	7	58	35	4,987	Mixed	2	12	July	No	Req	25	$30(e)
St. Joseph's Hospital [1]	Elmira	Church	216	9		91	4,509	Rotating	4	12	July	No	Req	16	$25
Ideal Hospital	Endicott	City	146	5	8	89	2,954	Rotating	4	12	July	No	None	34	$30(8)
Flushing Hospital and Dispensary	Flushing	NPAssn	258	30		70	5,885	Rotating	8	24	July	No	Req	19	$25
Meadowbrook Hospital [1]	Hempstead	County	216	50	5	5	4,729	Rotating	9	12	July	No	Op	39	$25-30
Jamaica Hospital	Jamaica	NPAssn	187	30	1	69	4,029	Rotating	8	18	Jan. & July	No	Req	41	$15
Mary Immaculate Hospital	Jamaica	Church	321	6	40	54	7,678	Rotating	16	24	July	No	Req	39	No
Queen's General Hospital [1]	Jamaica	City	636	100			12,654	Rotating	36	24	July	No	Req	58	$15
Charles S. Wilson Memorial Hospital [1]	Johnson City	NPAssn	350	1		99	5,478	Rotating	6	24	July	No	Req	53	$35(f)
Kingston Hospital [1]	Kingston	NPAssn	133	1	72	27	2,521	Rotating	3	12	Jan. & July	(66)	None	26	$25(q)
Our Lady of Victory Hospital	Lackawanna	Church	152	15	31	54	2,214	Rotating	3	12	July	No	Req	17	$30
St. John's Long Island City Hospital	Long Island City	Church	297	56		24	5,764	Rotating	16	24	July	No	Req	60	No
Nassau Hospital	Mineola	NPAssn	200	15	56	31	4,647	Rotating	4	18	Jan. & July	No	None	15	$30
New Rochelle Hospital	New Rochelle	NPAssn	147	36		64	4,701	Rotating	8	12	July	No	Req	50	$25
Beekman Street Hospital [1]	New York	NPAssn	100	30	65	5	2,182	Mixed	8	24	Jan. & July	No	Req	29	$30
Bellevue Hospital [1]	New York	City	2,333	100			62,112	Mix & Str	92	12-24	Jan. & July	No	Req	32	$15
Beth David Hospital [1]	New York	NPAssn	156	10	51	39	2,372	Rotating	8	24	July	No	Req	29	No
Beth Israel Hospital [1]	New York	NPAssn	444	44	11	45	10,151	Rotating & Str	28	12-36	(1-f)	No	Op	33	No
Bronx Hospital	New York	NPAssn	502	20	24	56	10,777	Rotating	18	24	(1-s)	No	Req	40	(l)
Columbus Hospital	New York	Church	300	19	48	33	5,108	Rotating	10	18	Jan. & July	No	Req	19	No
Flower-Fifth Avenue Hospital [1]	New York	NPAssn	551	44	50	26	8,433	Rotating	24	24	July	No	Req	26	No
Fordham Hospital	New York	City	600	100			12,808	Rotat & Mix	28	12&24	(1-f)	No	Op	35	$15
French Hospital	New York	NPAssn	300	30		70	4,702	Straight	15	12&24	(1-f)	No	Op	25	(q)
Gouverneur Hospital	New York	City	220	100			4,309	Rotating	16	24	(1-f)	No	Req	31	$15
Harlem Hospital [1]	New York	City	672	100			17,518	Rotating	48	24	Jan. & July	No	Req	24	$15
Hospital for Joint Diseases	New York	NPAssn	355	54	9	37	5,807	Rotating	12	24	Jan. & July	(67)	Req	53	No
Knickerbocker Hospital	New York	NPAssn	150	3	66	31	3,710	Rotating	11	22½	(1-in)	No	Req	29	No
Lebanon Hospital	New York	NPAssn	154	50	46	4	2,867	Rotating	12	24	(1-t)	No	Req	32	No
Lenox Hill Hospital [1]	New York	NPAssn	595	21	14	65	10,528	Rotat & Mix	24	24	Jan. & July	No	Req	43	(v)
Lincoln Hospital	New York	City	368	97	3		9,436	Rotating	37	12&24	Jan. & July	No	Req	41	$15
Metropolitan Hospital [1]	New York	City	1,425	100			17,830	Rotating	44	24	July	No	Req	18	$15
Misericordia Hospital	New York	Church	252	46		54	5,398	Rotating	8	24	Jan. & July	No	Req	25	$10
Montefiore Hosp. for Chronic Diseases [1]	New York	NPAssn	702	86	13	1	2,026	Mix & Str	14	12	Jan. & July	No	Req	67	$25
Morrisania City Hospital [1]	New York	City	539	100			13,303	Rotating	32	24	Jan. & July	No	Req	30	$15
Mount Sinai Hospital [1]	New York	NPAssn	856	56	30	14	14,749	Mix & Str	28	12&30	(1-t)	No	Op	48	(q)
New York City Hospital	New York	City	1,650	100			30,645	Rotating	36	24	July	No	Req	21	$15
New York Hospital [1]	New York	NPAssn	1,024	5	46	49	14,784	Straight	55	12	July	(68)	Req	52	No
New York Infirmary for Women and Children [2]	New York	NPAssn	162	35	5	60	3,610	Rotating	5	12	June & Sept.	No	Req	64	$10
New York Polyclinic Medical School and Hospital	New York	NPAssn	346	16	31	53	7,564	Rotating	8	24	(1-f)	No	Req	20	No
New York Post-Graduate Medical School and Hospital	New York	NPAssn	466	30	5	65	9,511	Mix & Str	26	12&24	(1-f)	No	Req	30	No
Presbyterian and Sloane Hospitals [1]	New York	NPAssn	987	30	43	27	18,030	Mix & Str	49	12-25	Varies	No	Req	50	No
Roosevelt Hospital	New York	NPAssn	314	34	44	22	7,534	Mixed	21	12-36	Jan. & July	No	Req	33	No
St. Francis Hospital	New York	Church	380	39	37	24	5,305	Mixed	8	24	Jan. & July	No	None	29	No
St. Luke's Hospital	New York	Church	475	48		52	8,009	Mixed	16	24	Jan. & July	No	Req	43	(v)
St. Vincent's Hospital	New York	Church	465	56	28	16	8,424	Mixed	33	24	Jan. & July	No	Req	31	No
Syndenham Hospital [1]	New York	NPAssn	200	10	50	40	5,357	Rotating	16	24	Jan. & July	No	Req	24	No
United Hospital	Port Chester	NPAssn	250	2	26	72	4,406	Rotating	8	12	July	No	Req	22	$30(l)
Vassar Brothers Hospital	Poughkeepsie	NPAssn	225	22		78	3,944	Rotating	4	12	July	No	Req	22	$30(e)
Genesee Hospital	Rochester	NPAssn	222	29	28	43	5,301	Rotating	8	24	July	No	Req	32	$10-15
Highland Hospital	Rochester	NPAssn	200	6	80	14	4,253	Rotating	8	24	July	No	Req	27	$25
Rochester General Hospital	Rochester	NPAssn	368	60	30	10	8,244	Rotating	12	12	July & Sept.	No	Req	60	$15
St. Mary's Hospital	Rochester	Church	225	10	56	34	5,177	Rotating	5	12	July	No	Req	31	$30
Strong Memorial and Rochester Municipal Hospitals [1]	Rochester	NP-Cy	657	58	18	24	12,121	Straight	32	12	July	No	Req	69	No
Ellis Hospital [1]	Schenectady	NPAssn	295	1	3	96	7,858	Rotating	10	12	July	No	Req	21	No
U. S. Marine Hospital (Staten Island)	Stapleton	USPHS	716	100			6,187	Rotating	8	12	July	(69)	Req	57	(h)
St. Vincent's Hospital	Staten Island	Church	241	9	69	22	5,564	Rotating	8	24	July	No	Req	19	No
Staten Island Hospital	Staten Island	Corp	268	2	84	14	5,502	Rotating	7	24	July	No	Req	20	No
Crouse-Irving Hospital	Syracuse	NPAssn	240	13	55	32	5,512	Rotating	4	12	July	No	None	27	$25
General Hospital of Syracuse	Syracuse	NPAssn	110	16	58	26	2,544	Rotating	3	12	July	No	Req	27	No
Hospital of the Good Shepherd, Syracuse University	Syracuse	NPAssn	242	2	43	55	5,263	Rotating	9	12	July & Aug.	(70)	None	44	No
St. Joseph Hospital	Syracuse	Church	231	34	46	20	6,294	Rotating	6	12	July	No	Op	25	No
Syracuse Memorial Hospital	Syracuse	Corp	250	45	28	27	6,615	Rotating	7	12	July	No	Req	28	No
Samaritan Hospital	Troy	NPAssn	181	5	69	26	2,804	Rotating	4	12	(1-h)	No	Req	22	$25(f)
Troy Hospital [1]	Troy	Church	284	40	33	27	5,241	Rotating	4	12	July	(62)	Req	30	$30
Grasslands Hospital [1]	Valhalla	County	932	90	1	9	6,414	Rotating	20	24	Jan. & July	No	Req	71	(l)
St. Agnes Hospital	White Plains	Church	140	6	4	90	3,044	Rotating	3	12	July	No	Req	36	$25
St. John's Riverside Hospital	Yonkers	NPAssn	200	29		71	4,447	Rotating	5	12	Jan. & July	No	Op	41	$30
St. Joseph's Hospital	Yonkers	Church	197	7	16	77	2,305	Rotating	5	18	Jan. & July	No	Req	17	No
Yonkers General Hospital	Yonkers	NPAssn	178	29	13	58	2,227	Rotating	4	12	Jan. & July	No	Req	23	(w)
NORTH CAROLINA															
Duke Hospital	Durham	NPAssn	455	64	27	9	10,750	Straight	33	12	July & Sept.	No	Req	64	No
Lincoln Hospital (col.)	Durham	NPAssn	108	58	17	25	1,700	Mixed	3	12	July	No	Req	30	$5
Watts Hospital	Durham	NPAssn	215	23	35	42	4,971	Rotating	7	12	July	No	Req	18	$15
Highsmith Hospital	Fayetteville	NPAssn	125	30	50	30	3,001	Mixed	2	12	July	No	Req	35	$25
L. Richardson Memorial Hospital (col.)	Greensboro	NPAssn	64	30	30	40	901	Mixed	2	12	July & Oct.	No	Req	10	$10
Rex Hospital	Raleigh	NPAssn	136	23	18	59	4,367	Rotating	4	12	July	No	Req	15	$25
St. Agnes Hospital (col.)	Raleigh	Church	100	60	10	30	1,576	Mixed	2	12	July & Sept.	No	Req	26	(l)
Park View Hospital	Rocky Mount	NPAssn	120	25	10	65	2,829	Rotating	3	12	July	No	Req	22	$25
James Walker Memorial Hospital	Wilmington	NPAssn	152	40	6	54	5,061	Rotating	5	12	July	No	Req	16	$25(f)
City Memorial Hospital	Winston-Salem	City	191	42	6	52	4,614	Mixed	8	12	July	(71)	Req	26	$15(x)
NORTH DAKOTA															
St. John's Hospital	Fargo	Church	165	15	45	40	4,660	Mixed	3	12	July	(72)	None	33	$30
Trinity Hospital	Minot	Church	202	10	45	45	2,681	Rotating	4	12	July	No	None	92	$25
OHIO															
City Hospital	Akron	NPAssn	250	40	7	53	8,241	Rotating	12	12	July	(73)	Req	49	$22
Peoples Hospital	Akron	NPAssn	150	19		81	3,740	Rotating	4	12	July	(73)	Req	31	$25
St. Thomas Hospital	Akron	Church	174	36	39	25	4,614	Rotating	4	12	July	No	None	21	$15

Numerical and other references will be found on page 692.

V 1
193

Name of Hospital	Location	Control	Capacity	Classification of Patients Percentage: Free	Part Pay	Full Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
OHIO—Continued															
Aultman Hospital [1]	Canton	NPAssn	171	13	63	24	5,242	Rotating	4	12	July	(74)	None	28	$30
Mercy Hospital	Canton	Church	218	17	65	18	5,844	Rotating	4	12	July	No	Req	24	$25
Bethesda Hospital	Cincinnati	Church	239	1	42	57	7,657	Rotating	8	12	July	(75)	Req	17	$25(e)
Christ Hospital	Cincinnati	Church	369	3	70	27	6,882	Rotating	9	12	July	(76)	Req	24	$22.50
Cincinnati General Hospital [1]	Cincinnati	City	925	87	10	3	16,618	Rotating	38	12	July	(77)	Req	48	No
Deaconess Hospital	Cincinnati	Church	175	5	41	54	4,261	Rotating	6	12	July	(78)	Req	18	$25
Good Samaritan Hospital	Cincinnati	Church	370	5	66	29	12,518	Rotating	14	12	June	No	Op	15	$12.50
Jewish Hospital	Cincinnati	NPAssn	262	30	44	26	5,593	Rotating	8	12	July	(79)	Req	30	$30
St. Mary Hospital	Cincinnati	Church	220	42	50	8	4,597	Rotating	6	12	July	No	Req	22	$25
City Hospital [1]	Cleveland	City	1,579	97	2	1	14,314	Rotating	36	12	July	No	Req	41	No
Lutheran Hospital	Cleveland	Church	137	10	32	55	3,764	Rotating	4	12	July	No	None	23	$25(e)
Mount Sinai Hospital [1]	Cleveland	NPAssn	270	23	15	62	7,868	Rotating	11	12	July	(80)	Req	25	$10
St. Alexis Hospital	Cleveland	Church	220	25	3	72	4,443	Rotating	8	12	July	(81)	Req	25	$10
St. John's Hospital	Cleveland	Church	214	18	10	72	5,250	Rotating	6	12	July	No	None	24	$10(y)
St. Luke's Hospital	Cleveland	Church	204	18	2	80	10,048	Rotating	16	12	July	No	Req	23	No
St. Vincent Charity Hospital	Cleveland	Church	295	35	1	64	5,429	Rotating	12	12	July	(81)	Req	37	No
University Hospitals [1]	Cleveland	NPAssn	826	30	16	54	17,308	Mix&Str	38	12-24	(1-n)	No	Req	57	(z)
Woman's Hospital [1]	Cleveland	NPAssn	160	1	4	95	2,571	Rotating	3	12	July	No	None	26	$25
Grant Hospital	Columbus	NPAssn	333	8	58	34	5,959	Rotating	8	12	July	No	None	27	$25
Mount Carmel Hospital	Columbus	Church	239	30	30	50	3,936	Rotating	6	12	July	(82)	None	36	$25
St. Francis Hospital	Columbus	State	158	70	13	17	3,185	Rotating	8	12	July	(83)	None	28	$125yr.
Starling-Loving University Hospital [1]	Columbus	State	287	55	19	26	5,067	Rotat&Str	10	12&24	July	No	Req	47	(aa)
White Cross Hospital	Columbus	Church	271	16	84	54	5,537	Mixed	6	12	July	No	None	40	$25
Good Samaritan Hospital [1]	Dayton	Church	250	50	5	65	3,549	Rotating	4	12	July	No	Req	25	$25
Miami Valley Hospital	Dayton	NPAssn	390	28	29	43	9,115	Rotating	8	12	July	(84)	None	33	$25
St. Elizabeth Hospital	Dayton	Church	400	49	17	34	5,228	Rotating	6	12	July	No	None	28	$25
Huron Road Hospital [1]	East Cleveland	NPAssn	258	13		87	5,000	Rotating	9	12	July	No	Req	33	$25
Mercy Hospital	Hamilton	Church	300	25	50	25	3,410	Rotating	2	12	July	No	Req	36	$25(bb)
Springfield City Hospital	Springfield	City	298	31	22	47	4,389	Mixed	6	12	July	No	Req	25	$25
Flower Hospital	Toledo	Church	130	6	37	57	2,919	Rotating	3	12	July	No	Req	26	$25
Lucas County General Hospital	Toledo	County	311	100			4,391	Rotating	10	12	July	No	Req	27	$25
Mercy Hospital	Toledo	Church	140	5	77	18	2,925	Rotating	4	12	July	No	Req	34	$25
St. Vincent's Hospital [1]	Toledo	Church	354	29	36	35	10,030	Rotating	14	12	July	No	Req	41	$25
Toledo Hospital	Toledo	NPAssn	275	6	60	34	5,185	Rotating	5	12	July	No	None	41	$25
St. Elizabeth's Hospital	Youngstown	Church	261	20	19	61	5,462	Rotating	6	12	July	No	None	16	$30(e)
Youngstown Hospital	Youngstown	NPAssn	450	27	23	50	8,582	Rotating	12	12	July	No	Req	25	$30
OKLAHOMA															
Oklahoma City General Hospital	Oklahoma City	Corp	100		32	68	3,400	Mixed	4	12	July	No	Req	22	$25
St. Anthony Hospital	Oklahoma City	Church	240	10	51	39	8,703	Rotating	8	12	July	No	Op	30	$15
State University and Crippled Children's Hospitals	Oklahoma City	State	445	67	30	3	6,679	Rotating	20	24	July	No	Req	57	$10-25
Wesley Hospital	Oklahoma City	Part	175		25	75	4,345	Rotating	5	12	July	No	None	19	$25
Morningside Hospital	Tulsa	Corp	250	4	45	51	4,716	Rotating	6	12	July	No	Req	24	$25
St. John's Hospital	Tulsa	Church	285	25	25	50	5,317	Rotating	6	12	July	No	Req	22	$25(cc)
OREGON															
Emanuel Hospital [1]	Portland	Church	310	10	10	80	7,936	Rotating	7	12	June	(85)	None	25	$30
Good Samaritan Hospital	Portland	Church	350	2	7	91	11,144	Rotating	10	12	July	No	Op	33	$30
Portland Sanitarium and Hospital	Portland	Church	155	12	28	60	4,930	Rotating	4	12	July	No	None	44	$25(a)
St. Vincent's Hospital	Portland	Church	416	15	45	40	10,396	Rotating	8	12	July	No	None	35	$25
Univ. of Oregon Medical School Hosps.	Portland	Co-Sta	400	100			7,569	Rotating	16	12	July	(86)	Req	66	$30
PENNSYLVANIA															
Abington Memorial Hospital	Abington	NPAssn	302	22	18	60	5,725	Rotating	10	24	July	No	Req	38	No
Allentown Hospital [1]	Allentown	NPAssn	325	28	15	47	6,360	Rotating	10	12	July	No	Req	31	No
Sacred Heart Hospital	Allentown	Church	305	59	5	36	4,137	Rotating	6	12	July	(87)	Req	33	No
Altoona Hospital	Altoona	NPAssn	250	44	8	48	5,657	Rotating	5	12	July	No	Req	19	$25
Mercy Hospital	Altoona	NPAssn	138	53	2	45	3,164	Rotating	4	12	July	No	Req	36	$25
St. Luke's Hospital	Bethlehem	NPAssn	215	35	11	54	4,582	Rotating	7	12	July	No	Req	38	(1)
Braddock General Hospital	Braddock	NPAssn	136	35	17	48	2,213	Rotating	4	12	July	No	Req	22	No
Bryn Mawr Hospital	Bryn Mawr	NPAssn	264	12	30	58	4,539	Rotating	8	12	July	No	Req	40	No
Chester Hospital [1]	Chester	NPAssn	285	54	4	42	4,156	Rotating	6	12	July	No	Req	17	$15
George F. Geisinger Memorial Hospital	Danville	NPAssn	181	23	31	46	4,220	Rotating	10	12	July	No	Req	40	No
Fitzgerald-Mercy Hospital [1]	Darby	Church	248	55	13	32	3,577	Rotating	6	12	July	No	Req	33	No
Easton Hospital	Easton	NPAssn	220	26	7	67	4,847	Rotating	5	12	July	No	Req	19	No
Hamot Hospital	Erie	NPAssn	250	46	14	40	5,255	Rotating	7	12	July	No	Req	30	$25
St. Vincent's Hospital	Erie	NPAssn	236	39		61	6,069	Rotating	8	12	July	No	Req	23	$15(c)
Harrisburg Hospital [1]	Harrisburg	NPAssn	364	48	6	46	6,044	Rotating	8	12	July	No	Req	37	$15
Harrisburg Polyclinic Hospital	Harrisburg	NPAssn	182	42		58	3,419	Rotating	4	12	July	No	Req	29	$50
Conemaugh Valley Memorial Hospital	Johnstown	NPAssn	278	47	22	31	5,711	Rotating	6	12	July	No	Op	17	No
Nesbitt Memorial Hospital [1]	Kingston	NPAssn	230	25	10	65	3,701	Rotating	3	12	July	No	Req	30	No
Lancaster General Hospital [1]	Lancaster	NPAssn	365	35	3	62	5,456	Rotating	6	12	July	No	Req	51	$17.50
St. Joseph's Hospital [1]	Lancaster	Church	210	39	27	34	3,228	Rotating	5	12	July	No	Req	33	$17.50
McKeesport Hospital	McKeesport	NPAssn	263	31	3	66	4,782	Rotating	6	12	July	No	Req	24	$25
Montgomery Hospital	Norristown	NPAssn	140	58	18	24	3,207	Rotating	4	12	July	No	Req	36	$30
Chestnut Hill Hospital	Philadelphia	NPAssn	114	15	28	57	1,957	Rotating	4	12	July	No	Req	36	$50
Frankford Hospital	Philadelphia	NPAssn	142	12	19	69	3,453	Rotating	7	12	July	No	Req	25	No
Germantown Dispensary and Hospital	Philadelphia	NPAssn	396	17	33	50	7,066	Rotating	12	24	July	No	Req	27	No
Graduate Hospital of the University of Pennsylvania	Philadelphia	NPAssn	306	36	9	55	6,660	Rotating	16	24	July	(88)	Req	36	No
Hahnemann Hospital	Philadelphia	NPAssn	592	47	17	36	12,135	Rotating	24	12	July	No	Op	37	No
Hospital of the Protestant Episcopal Church	Philadelphia	Church	480	67	23	10	7,331	Rotating	18	24	Jan. & July	No	Req	45	No
Hospital of the Univ. of Pennsylvania [1]	Philadelphia	State	597	31	27	42	10,454	Rotating	28	24	July	No	Req	65	No
Hosp. of the Woman's Medical College [2]	Philadelphia	NPAssn	173	27	36	37	5,518	Rotating	6	12	July & Sept.	No	Req	46	No
Jefferson Medical College Hospital	Philadelphia	NPAssn	688	54	18	28	12,680	Rotating	28	27	June	No	Req	49	No
Jewish Hospital [1]	Philadelphia	NPAssn	446	32	14	54	7,312	Rotating	18	24	June	(89)	Req	52	No
Lankenau Hospital	Philadelphia	NPAssn	296	21	19	60	3,955	Rotating	10	24	July	(90)	Req	33	No
Mercy Hospital [1] (col.)	Philadelphia	NPAssn	110	73	22	5	2,044	Rotating	5	12	July	(91)	Req	22	$10
Methodist Episcopal Hospital	Philadelphia	Church	279	24	25	51	5,836	Rotating	8	12	July	No	Req	22	No
Misericordia Hospital [1]	Philadelphia	Church	230	15	8	77	4,436	Rotating	9	12	July	No	Req	37	No
Mount Sinai Hospital	Philadelphia	NPAssn	316	19	31	50	7,770	Rotating	14	12	June	No	Req	43	No
Northeastern Hospital	Philadelphia	NPAssn	102	10	10	80	2,731	Rotating	4	12	July	No	Req	18	$30
Pennsylvania Hospital	Philadelphia	NPAssn	560	31	30	39	10,387	Rotating	18	24	(1-v)	(92)	Req	51	No
Philadelphia General Hospital [1]	Philadelphia	City	2,400	93	4	1	21,175	Rotating	60	24	July	(89)	Req	51	No

Numerical and other references will be found on page 692.

109
37

Name of Hospital	Location	Control	Capacity	Classification of Patients Percentage: Free	Part Pay	Full Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
PENNSYLVANIA—Continued															
Presbyterian Hospital	Philadelphia	Church	356	19	15	66	4,771	Rotating	12	24	July	No	Req	46	No
St. Agnes Hospital	Philadelphia	Church	406	41	25	34	6,068	Rotating	12	12	July	No	Req	15	No
St. Joseph's Hospital	Philadelphia	Church	180	41	19	40	3,007	Rotating	6	12	July	No	Req	22	No
St. Luke's and Children's Hospital	Philadelphia	NPAssn	259	38	23	39	4,958	Rotating	8	12	July	No	Req	35	No
St. Mary's Hospital	Philadelphia	Church	272	70	13	17	5,696	Rotating	7	12	July	No	Req	40	No
Temple University Hospital	Philadelphia	NPAssn	451	42	49	8	9,444	Rotating	18	24	July	(93)	Req	34	No
U. S. Naval Hospital	Philadelphia	Navy	650	100	..	..	5,042	Rotating	..	12	July	....	Req	47	(b)
Woman's Hospital [2]	Philadelphia	NPAssn	150	50	29	21	3,261	Rotating	6	12	July & Sept.	(94)	Op	28	No
Women's Homeopathic Hospital [2]	Philadelphia	NPAssn	200	50	26	24	2,904	Rotating	4	12	July	No	Req	15	$10
Allegheny General Hospital [2]	Pittsburgh	NPAssn	600	55	4	41	6,545	Rotating	16	12	July	No	Req	24	No
Homeopathic Medical and Surgical Hospital and Dispensary	Pittsburgh	NPAssn	270	27	2	71	4,872	Rotating	7	12	July	(95)	Req	20	No
Mercy Hospital	Pittsburgh	Church	670	35	35	30	11,466	Rotating	24	12	July	(96)	Req	36	No
Montefiore Hospital	Pittsburgh	NPAssn	238	39	41	20	6,063	Rotating	9	12	July	No	Req	34	$10
Passavant Hospital [2]	Pittsburgh	Church	140	37	5	58	2,517	Rotating	5	12	July	No	Req	31	$10
Pittsburgh Hospital	Pittsburgh	NPAssn	212	32	8	60	4,128	Rotating	6	12	July	No	Req	23	$25
Presbyterian Hospital [2]	Pittsburgh	NPAssn	162	50	7	43	2,567	Rotating	18	12	July	(97)	Req	15	No
St. Francis Hospital	Pittsburgh	Church	587	14	18	68	8,318	Rotating	20	12	July	(95)	Req	31	No
St. John's General Hospital	Pittsburgh	NPAssn	203	35	4	61	3,293	Rotating	5	12	July	No	Req	28	(g)
St. Joseph's Hospital	Pittsburgh	Church	140	30	60	10	2,273	Rotating	4	12	July	No	Req	36	(g)
St. Margaret Memorial Hospital [2]	Pittsburgh	Church	150	43	34	23	2,404	Rotating	4	12	July	No	Req	27	No
South Side Hospital	Pittsburgh	NPAssn	225	25	49	26	5,187	Rotating	7	12	July	No	Req	22	No
Western Pennsylvania Hospital [2]	Pittsburgh	NPAssn	661	35	5	65	10,690	Rotating	19	12	July	No	Req	22	No
Pottsville Hospital [2]	Pottsville	NPAssn	140	48	6	46	3,100	Rotating	4	12	July	No	Req	15	$25
Homeopathic Med. and Surgical Hosp.	Reading	NPAssn	115	59	1	40	2,386	Rotating	4	12	June	No	Req	15	$25
Reading Hospital	Reading	NPAssn	250	48	4	48	6,133	Rotating	8	12	July	No	Req	63	No
St. Joseph's Hospital	Reading	Church	205	49	23	28	4,225	Rotating	6	12	July	No	Req	40	No
Robert Packer Hospital	Sayre	NPAssn	325	52	5	43	6,611	Rotating	9	12	Jan. & July	No	Req	43	No
Hahnemann Hospital	Scranton	NPAssn	125	55	7	38	3,041	Rotating	4	12	July	No	Req	35	$13.50
Moses Taylor Hospital	Scranton	NPAssn	125	67	..	33	2,030	Rotating	5	12	July	(100)	Req	36	$15
Scranton State Hospital [2]	Scranton	State	1,500	90	5	15	4,340	Rotating	8	12	July	No	Req	28	$6.33
Valley Hospital	Sewickley	NPAssn	140	31	6	63	2,656	Rotating	4	12	July	No	Req	18	$25
Uniontown Hospital	Uniontown	NPAssn	210	31	6	63	4,613	Rotating	5	12	July	No	Req	22	$25
Washington Hospital	Washington	NPAssn	166	65	4	31	5,152	Rotating	4	12	July	No	Req	32	$25
Chester County Hospital	West Chester	NPAssn	150	50	17	33	2,858	Rotating	4	12	July	No	Req	36	$30
Mercy Hospital [2]	Wilkes-Barre	Church	222	50	1	49	4,208	Rotating	6	12	July	No	Req	19	No
Wilkes-Barre General Hospital	Wilkes-Barre	NPAssn	405	65	3	32	8,337	Rotating	10	12	July	No	Req	21	No
Columbia Hospital [2]	Wilkinsburg	Church	213	41	1	58	5,566	Rotating	5	12	July	No	Req	35	$20
Williamsport Hospital [2]	Williamsport	NPAssn	275	47	4	49	4,657	Rotating	6	12	July	No	Req	31	$50
Windber Hospital [2]	Windber	NPAssn	117	10	70	20	2,658	Rotating	2	12	July	No	Req	27	$25
York Hospital	York	NPAssn	209	52	6	42	4,651	Rotating	6	12	July	No	Req	33	$25
RHODE ISLAND															
Memorial Hospital	Pawtucket	NPAssn	196	42	5	53	3,043	Rotating	6	12	June & Aug.	No	Req	24	No
Homeopathic Hospital	Providence	NPAssn	200	15	35	50	4,418	Rotating	4	12	July	No	Req	31	$30
Rhode Island Hospital	Providence	NPAssn	600	40	28	32	10,406	Rotating	28	24	(1-w)	(101)	Req	46	No
St. Joseph's Hospital	Providence	Church	350	45	15	40	4,504	Rotating	7	24	(1-t)	No	Req	20	No
SOUTH CAROLINA															
Roper Hospital	Charleston	NPAssn	300	78	2	20	7,337	Rotating	14	12	July	No	Req	35	$10
Columbia Hospital [2]	Columbia	County	277	24	17	59	6,475	Rotating	6	12	July & Oct.	No	Req	18	$15(f)
Greenville General Hospital	Greenville	City	200	50	10	40	4,590	Rotating	5	12	July	No	Req	32	$15(g)
TENNESSEE															
Baroness Erlanger Hospital	Chattanooga	CyCo	247	60	2	38	7,111	Rotating	12	12	July	No	Req	24	$25
Knoxville General Hospital	Knoxville	City	274	65	..	35	7,081	Rotating	9	18	(1-f)	No	Req	18	$25
Baptist Memorial Hospital	Memphis	Church	400	30	18	52	14,698	Rotating	14	18	(1-f)	No	None	20	$25
John Gaston Hospital	Memphis	City	550	95	..	5	14,871	Rotating	18	18	(1-w)	No	Req	16	$30
Methodist Hospital	Memphis	Church	185	25	15	60	6,434	Mixed	4	12	(1-f)	No	None	28	$30
St. Joseph's Hospital	Memphis	Church	200	33	35	32	5,910	Rotating	4	12	(1-f)	No	Req	21	$25
George W. Hubbard Hospital (col.)	Nashville	NPAssn	178	75	21	4	2,241	Rotating	6	12	July	No	Req	20	$15
Nashville General Hospital	Nashville	City	305	90	..	10	7,380	Rotating	10	12	July	No	Req	37	$30
St. Thomas Hospital	Nashville	Church	225	6	44	50	5,075	Rotating	6	12	July	No	None	37	$40
Vanderbilt University Hospital	Nashville	NPAssn	240	32	33	35	4,680	Straight	12	12	July	(102)	Op	54	$21.75
TEXAS															
Baylor University Hospital [2]	Dallas	Church	460	20	20	60	12,688	Rotating	13	12	July	(100)	Req	28	$25
Methodist Hospital	Dallas	Church	125	10	15	75	3,363	Rotating	4	12	July	No	Req	20	$25(i)
Parkland Hospital [2]	Dallas	CyCo	300	92	..	8	9,018	Rotating	20	24	Jan. & July	No	Req	17	$40
St. Paul's Hospital	Dallas	Church	300	11	17	72	8,209	Rotating	9	12	July	No	Req	22	$25
El Paso City-County Hospital	El Paso	CyCo	204	95	5	..	3,734	Rotating	5	12	July	No	Req	50	$25(j)
William Beaumont General Hospital	El Paso	Army	608	100	..	..	4,466	Rotating	4	12	July	No	Req	78	(b)
City and County Hospital	Fort Worth	CyCo	111	100	..	..	3,518	Rotating	4	12	July	No	Req	26	$25
St. Joseph's Hospital	Fort Worth	Church	300	17	16	67	4,603	Rotating	4	12	July	No	None	25	$25
John Sealy Hospital	Galveston	City	406	60	24	16	6,633	Rotating	12	12	June & July	No	Req	37	No
St. Mary's Infirmary [2]	Galveston	Church	225	15	50	35	3,760	Mixed	3	12	June	No	None	30	$30
Hermann Hospital	Houston	NPAssn	196	75	..	25	4,559	Rotating	6	12	July	No	Req	44	$25
Jefferson Davis Hospital	Houston	CyCo	250	100	..	..	8,591	Rotating	16	24	July	(104)	Req	20	$25-50
Medical and Surgical Memorial Hospital	San Antonio	NPAssn	115	4	12	84	3,727	Mixed	4	12	July	No	None	25	$25
Robert B. Green Memorial Hospital	San Antonio	County	170	98	2	..	4,725	Rotating	11	12	June	No	Req	17	$10
Santa Rosa Hospital	San Antonio	Church	305	21	21	58	5,886	Rotating	6	12	July	No	Req	21	$25
Station Hospital	San Antonio	Army	654	100	..	..	8,630	Rotating	4	12	July	No	Op	80	(b)
Gulf, Colorado and Santa Fe Hospital	Temple	NPAssn	150	..	..	100	1,200	Rotating	1	12	July	(105)	Op	33	$50
Kings Daughters Clinic and Hospital	Temple	NPAssn	118	..	..	..	2,576	Mixed	2	12	July	No	Req	22	$50
Scott and White Hospital	Temple	Corp	175	..	..	*	3,443	Rotating	5	12	July	(105)	Req	23	$50
UTAH															
Thomas D. Dee Memorial Hospital	Ogden	Church	240	3	7	90	5,750	Rotating	5	12	July	No	Req	28	$25
Dr. W. H. Groves Latter-Day Saints Hospital	Salt Lake City	Church	450	4	..	96	6,800	Rotating	10	24	July	(106)	Req	17	(dd)
Holy Cross Hospital	Salt Lake City	Church	245	7	21	72	3,542	Mixed	2	12	Jan. & July	No	None	27	$15(q)
St. Mark's Hospital [2]	Salt Lake City	Church	161	5	12	83	2,956	Mixed	3	12	July	No	Req	20	$25(j)
Salt Lake General Hospital	Salt Lake City	County	248	94	..	6	3,242	Rotating	8	12	July	No	Req	18	$15(j)
VERMONT															
Bishop DeGoesbriand Hospital	Burlington	Church	122	58	16	26	3,137	Rotating	3	12	July	No	None	34	$25
Mary Fletcher Hospital	Burlington	NPAssn	150	27	37	36	5,042	Rotating	5	12	July & Sept.	No	Req	43	$25

Numerical and other references will be found on page 692.

V 10
1937

Name of Hospital	Location	Control	Capacity	Classification of Patients Percentage			Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
				Free	Part Pay	Full Pay									
VIRGINIA															
Hospital of St. Vincent de Paul [1]	Norfolk	Church	250	38	18	44	5,844	Rotating	4	12	July	No	Req	17	$25
Norfolk General Hospital	Norfolk	NPAssn	230	30	20	50	6,031	Mixed	6	12	July & Oct.	No	Req	28	$25
U. S. Marine Hospital	Norfolk	USPHS	300	100			3,142	Rotating	8	12	July	(107)	Op	69	(b)
Norfolk Naval Hospital	Portsmouth	Navy	443	100			2,680	Rotating	..	12	July	...	None	57	(b)
Johnston-Willis Hospital [1]	Richmond	Corp	141	3	5	92	5,481	Rotating	3	12	July	No	Req	25	$15
Medical College of Virginia, Hospital Division [1] (Memorial, Dooley, St. Philip and Crippled Children's Hosps.)	Richmond	NPAssn	442	29	70	10	9,722	Mix & Rotat	23	12	July	(108)	Req	41	No
Stuart Circle Hospital	Richmond	Corp	168	3	45	52	2,864	Rotating	4	12	July	No	Req	38	$25
Jefferson Hospital	Roanoke	NPAssn	110		40	60	2,671	Mixed	2	12	July	No	Req	31	$45
University of Virginia Hospital [1]	University	State	378	26	33	41	7,761	Rotating	12	12	July	(109)	Req	28	No
WASHINGTON															
Columbus Hospital	Seattle	Church	220	20	60	20	2,891	Rotating	4	12	July	(110)	Req	23	$50
King County Hospital Unit No. 1 [1] (Harborview)	Seattle	County	445	100			9,556	Rotating	24	24	July	(111)	Req	41	$30
Providence Hospital	Seattle	Church	300	3	16	81	7,257	Rotating	8	12	July	(112)	Req	27	$30
Seattle General Hospital	Seattle	NPAssn	120			100	3,675	Rotating	4	12	July	(113)	Req	30	$30
Swedish Hospital	Seattle	NPAssn	200		5	95	5,400	Rotating	8	12	July & Oct.	(114)	Op	29	$30
U. S. Marine Hospital	Seattle	USPHS	401	100			3,272	Rotating	8	12	July	(115)	Req	75	(b)
Virginia Mason Hospital	Seattle	NPAssn	180		18	82	3,626	Rotating	4	12	July	No	None	49	$30
Deaconess Hospital	Spokane	Church	257	8	30	62	4,483	Rotating	3	12	July	(116)	None	54	$25
Sacred Heart Hospital	Spokane	Church	334	9	27	64	8,407	Mixed	6	12	July	(116)	None	23	$25
St. Luke's Hospital	Spokane	NPAssn	195	5	20	75	3,492	Rotating	4	12	July	(117)	None	36	$35
Pierce County Hospital	Tacoma	County	220	100			3,629	Mixed	3	12	No	No	Op	30	$45
St. Joseph's Hospital	Tacoma	Church	350	6	6	88	5,985	Rotating	3	12	July	No	Req	25	$30
Tacoma General Hospital	Tacoma	NPAssn	220			100	3,940	Rotating	4	12	July	No	None	36	$35
WEST VIRGINIA															
Charleston General Hospital	Charleston	NPAssn	225	10	40	50	6,783	Rotating	7	12	July	No	Req	17	$25
Chesapeake and Ohio Railway Hospital	Huntington	NPAssn	130		100		2,769	Rotating	4	12	July	No	Req	24	$37.50
St. Mary's Hospital	Huntington	Church	120	11	19	70	3,900	Rotating	4	12	July	No	Req	16	$30
Ohio Valley General Hospital	Wheeling	NPAssn	256	9	44	47	5,250	Rotating	7	12	July	No	Req	18	$25
Wheeling Hospital	Wheeling	Church	330	25	8	67	5,253	Rotating	4	12	July	No	None	22	$30
WISCONSIN															
St. Elizabeth Hospital	Appleton	Church	180	25	50	25	3,300	Rotating	2	12	June	No	None	36	$25
St. Agnes Hospital	Fond du Lac	Church	250	22	18	60	5,673	Rotating	5	12	June	No	None	30	$25
Mercy Hospital [1]	Janesville	Church	150	25	25	50	1,920	Mixed	2	12	July	No	None	30	$12.50
La Crosse Lutheran Hospital	La Crosse	Church	120	5	10	85	2,353	Mixed	1	12	July	No	Req	27	$25
St. Francis Hospital	La Crosse	Church	310	8	42	50	4,750	Rotating	4	12	July	No	Req	45	No
Madison General Hospital	Madison	NPAssn	165	6	15	79	4,670	Rotating	6	12	June & July	No	None	24	$25
Methodist Hospital	Madison	Church	120	2	12	86	2,758	Rotating	4	12	July	No	Req	21	$30
St. Mary's Hospital	Madison	Church	180	13	25	62	4,382	Rotating	5	12	July	No	Req	32	$35
State of Wisconsin General Hospital [1]	Madison	State	672	88	7	5	11,253	Rotating	22	12	July	No	Req	69	No
St. Joseph's Hospital	Marshfield	Church	175	5	40	55	3,333	Mixed	2	12	July	No	Req	15	$30
Columbia Hospital	Milwaukee	NPAssn	150	10	50	40	5,870	Rotating	8	24	July	(118)	Op	61	$25
Evangelical Deaconess Hospital	Milwaukee	Church	302	7	31	62	3,950	Rotating	4	12	June	(119)	None	49	$25
Milwaukee Hospital "The Passavant"	Milwaukee	Church	251	2	31	67	6,845	Rotating	7	12	July	(120)	Req	43	$25
Misericordia Hospital	Milwaukee	Church	150	3	8	89	5,355	Mixed	2	12	July	No	Op	24	$25
Mount Sinai Hospital	Milwaukee	Church	172	11	69	20	5,000	Rotating	6	12	July	No	Req	36	$25
St. Joseph's Hospital [1]	Milwaukee	Church	395	19	34	47	6,442	Rotating	7	12	July	No	Req	24	$25
St. Mary's Hospital	Milwaukee	Church	217	7	13	80	4,418	Rotating	6	12	July	No	Op	27	$25
Mercy Hospital [1]	Oshkosh	Church	150	10	20	70	2,933	Rotating	3	12	July	No	Op	39	$25
St. Mary's Hospital	Racine	Church	150	6	13	81	5,883	Mixed	2	12	July	No	None	28	$25
St. Mary's Hospital	Superior	Church	130	2	39	59	2,070	Mixed	2	12	July	No	Req	39	$25
Milwaukee County General Hospital [1]	Wauwatosa	County	1,125	100			17,940	Rotating	36	12	June	(121)	Req	34	$10
CANAL ZONE															
Gorgas Hospital	Ancon	Fed	872	9	91		11,723	Rotating	8	12	July	No	Op	56	(ee)
HAWAII															
Queen's Hospital	Honolulu	NPAssn	320	8	55	37	8,097	Rotating	7(ff)	18	(1-f)	(122)	None	25	$45.00
PHILIPPINE ISLANDS															
Philippine General Hospital [1]	Manila	Fed	727	93		7	21,656	Rotating	31(gg)	12	March	(123)	Req	71	No

Numerical and other references will be found on page 692.

HOSPITALS APPROVED FOR INTERNSHIPS IN THE DOMINION OF CANADA

For the benefit of graduates of approved medical colleges who desire an internship in Canada, the Council on Medical Education and Hospitals of the American Medical Association has declared that hospitals which conform to the standards of the Department of Hospital Service of the Canadian Medical Association should be regarded as giving an internship equivalent in educational value to that offered by hospitals in the United States approved for intern training by the Council. It is understood, however, that this statement applies only to hospitals that are unqualifiedly "approved" under the Canadian plan and does not apply to that group referred to as "Recommended." The following list of hospitals, revised to June 1937, has been furnished by the Department of Hospital Service.

Name of Hospital	Location
Victoria General Hospital	Halifax, N. S.
St. John General Hospital	St. John, N. B.
Hospital du St. Sacrament	Quebec, Que.
Hotel Dieu de Quebec	Quebec, Que.
Jeffrey Hale's Hospital	Quebec, Que.
Children's Memorial Hosp.	Montreal, Que.
Hospital Notre Dame	Montreal, Que.
Hospital Ste. Justine	Montreal, Que.
Hotel Dieu St. Joseph	Montreal, Que.
Hopital Ste. Luc	Montreal, Que.
Jewish General Hospital	Montreal, Que.
Montreal General Hospital	Montreal, Que.
Royal Victoria Hospital	Montreal, Que.
St. Mary's Hospital	Montreal, Que.
Woman's General Hospital	Montreal, Que.
Ottawa Civic Hospital	Ottawa, Ont.
Ottawa General Hospital	Ottawa, Ont.
Kingston General Hospital	Kingston, Ont.
Hospital for Sick Children	Toronto, Ont.
St. Joseph's Hospital	Toronto, Ont.
St. Michael's Hospital	Toronto, Ont.
Toronto East General Hosp.	Toronto, Ont.
Toronto General Hospital	Toronto, Ont.
Toronto Western Hospital	Toronto, Ont.
Women's College Hospital	Toronto, Ont.
Hamilton General Hospital	Hamilton, Ont.
Brantford General Hospital	Brantford, Ont.
St. Joseph's Hospital	London, Ont.
Victoria General Hospital	London, Ont.
Metropolitan General Hosp.	Windsor, Ont.
Hotel Dieu of St. Joseph Hosp.	Windsor, Ont.
Children's Hospital	Winnipeg, Man.
Winnipeg General Hospital	Winnipeg, Man.
St. Boniface General Hosp.	St. Boniface, Man.
Regina General Hospital	Regina, Sask.
St. Paul's Hospital	Saskatoon, Sask.
Saskatoon City Hospital	Saskatoon, Sask.
Edmonton General Hospital	Edmonton, Alta.
Misericordia Hospital	Edmonton, Alta.
Royal Alexandra Hospital	Edmonton, Alta.
University of Alberta Hosp.	Edmonton, Alta.
St. Paul's Hospital	Vancouver, B. C.
Vancouver General Hospital	Vancouver, B. C.
Provincial Royal Jubilee Hosp.	Victoria, B. C.

NOTES

1. Women interns admitted.
2. Women interns only.
* Majority of patients available for teaching purposes.
(a) In lieu of maintenance.
(b) Salary established by government pay tables.
(c) Bonus of $110.
(d) $30 per month second year.
(e) Bonus of $60.
(f) Bonus of $250.
(g) Bonus of $25.
(h) Bonus of $180.
(i) Bonus of $100.
(j) Bonus of $120.
(k) $25 per month second year.
(m) Bonus of $20.
(n) Bonus of $300.
(o) Bonus of $150.
(p) Bonus of $190.
(q) Bonus of $50.
(r) Bonus of $225.
(s) Bonus of $210.
(t) Bonus of $300.
(v) Bonus of $60.
(w) $25 per month for 4 months; $50 per month for 8 months; bonus of $100.
(x) Bonus of $125.
(y) Bonus of $50.
(z) $20 per month to seniors after completion of 12 months' service.
(aa) Bonus of $30 first year; $100 second year.
(bb) Bonus of $300.
(cc) Bonus of $75.
(dd) $15 per month first year; $20 per month second year; bonus of $75.
(ee) Net salary $70 per month. Appointments made by Chief of Office, The Panama Canal, Washington, D. C.
(ff) Prefer aspirants going into foreign missions or boys born and raised in Hawaii.
(gg) All internships reserved for the fifth year students of the College of Medicine, University of the Philippines.
(1-a) January, March, July, September, November.
(1-b) Every two months.
(1-c) January, March, June, September.
(1-d) January, May, September.
(1-e) January, April, July.
(1-f) Quarterly.
(1-g) April, July, October.
(1-h) July, August, September.
(1-i) Surgery: February, June, October; medicine: January, April, July, October.
(1-j) January, April, May, July, September, October.
(1-m) July 1st and every 4 months thereafter.
(1-n) February, June, October.
(1-o) June, July, August.
(1-p) Every six weeks.
(1-q) July, August, September, October.
(1-r) January, July, September.
(1-s) March, June, September, December.
(1-t) March, July, November.
(1-u) Every 2½ months.
(1-v) July, August, September, November, December.
(1-w) Monthly.

Affiliation as Referred to in Column Headed: "Affiliated Service"

3. Patton State Hospital, Patton, psychiatry.
4. Children's Hospital and Los Angeles Maternity Service, pediatrics, obstetrics.
5. Fairmont Hospital, San Leandro, tuberculosis.
6. Woman's Hospital, Pasadena, obstetrics.
7. Mercy Hospital, San Diego, obstetrics, gynecology.
8. Laguna Honda Home Infirmary, San Francisco, chronic diseases; Hassler Health Home, Redwood City, tuberculosis.
9. St. Francis Hospital, San Francisco, obstetrics, pediatrics.
10. San Francisco Hospital, obstetrics, gynecology, pediatrics.
11. White Memorial Hospital, Los Angeles, obstetrics, pediatrics, surgery.
12. Santa Barbara General Hospital, communicable diseases, tuberculosis, psychiatry, outpatient service.
13. St. Elizabeths Hospital, Washington, obstetrics.
14. Gallinger Municipal Hospital, Children's Hospital, Providence Hospital, Central Dispensary and Emergency Hospital, Washington, obstetrics, pediatrics, surgery.
15. Gallinger Municipal Hospital and Children's Hospital, Washington, obstetrics, pediatrics.
16. Grady Hospital, Atlanta, pediatrics.
17. Grady Hospital, Atlanta, obstetrics.
18. Misericordia Hospital and Home for Infants, Chicago, obstetrics.
19. Municipal Contagious Disease Hospital, Chicago.
20. Winfield Sanatorium, Winfield, tuberculosis.
21. Chicago Maternity Center.
22. Peoria State Hospital, Peoria Municipal Tuberculosis Sanitarium.
23. Watkins Memorial Hospital, Lawrence.
24. Sedgwick County Hospital, Wichita, general and outpatient service.
25. Salvation Army Home and Hospital and Sedgwick County Hospital, Wichita, obstetrics, general and outpatient service.
26. Julius Marks Sanatorium, Lexington, tuberculosis.
27. Louisville City Hospital, Children's Free Hospital, obstetrics, pediatrics.
28. Children's Free Hospital, Louisville, pediatrics.
29. Emergency Hospital of the Sisters of Charity, St. Mary's Infant Asylum and Maternity Hospital, and Providence Retreat.
30. Charity Hospital, New Orleans, obstetrics, gynecology, pediatrics.
31. Johns Hopkins Hospital, Baltimore, pathology.
32. Johns Hopkins Hospital, Baltimore, urology.
33. Sydenham Hospital, University Hospital, Baltimore, communicable diseases, pediatrics, obstetrics.
34. Sydenham Hospital, communicable diseases.
35. Boston State Hospital, Children's Hospital, psychiatry, pediatrics.
36. Evangeline Booth Maternity Hospital and Home, Boston.
37. Shriners Hospital for Crippled Children, Health Department Hospital, Wesson Maternity Hospital, Springfield, orthopedics, communicable diseases, obstetrics.
38. Merrywood Sanitarium, Ann Arbor, psychiatry.
39. Herman Kiefer Hospital, Detroit.
40. Herman Kiefer Hospital, Children's Hospital.
41. Herman Kiefer Hospital, communicable diseases, tuberculosis; St. Joseph's Retreat, Dearborn, neurology.
42. Christian Psychopathic Hospital, Sunshine Sanatorium, Grand Rapids, psychiatry, tuberculosis.
43. Ingham Sanatorium and Boys' Vocational School Hospital, Lansing, tuberculosis, otolaryngology.
44. Miller Memorial Hospital, Duluth, outpatient service.
45. Miller Memorial Hospital and Hearding Hospital, Duluth, outpatient service.
46. Gillette State Hospital for Crippled Children, St. Paul, orthopedics; Lutheran Girls' Maternity Home, Minneapolis, obstetrics; Glen Lake Sanatorium, Oak Terrace, tuberculosis.
47. Glen Lake Sanatorium, Oak Terrace, tuberculosis; Shriners Hospital for Crippled Children, Minneapolis, orthopedics.
48. Children's Hospital, St. Paul, pediatrics.
49. Gillette State Hospital for Crippled Children, St. Paul, orthopedics.
50. St. Louis Children's Hospital, Shriners Hospital for Crippled Children, City Isolation Hospital, surgery, orthopedics, communicable diseases.
51. Jewish Sanatorium, Robertson, tuberculosis; City Isolation Hospital, St. Louis, communicable diseases.
52. City Isolation Hospital, communicable diseases; Robert Koch Hospital, tuberculosis; City Sanitarium, psychiatry.
53. City Isolation Hospital, St. Louis.
54. St. Mary's Group of Hospitals includes St. Mary's Hospital, Firmin Desloge Hospital and St. St. Rose Sanatorium.
55. Newark City Hospital, obstetrics, gynecology, pediatrics.
56. "Bergen Pines" Bergen County Hospital, Ridgewood, tuberculosis, communicable diseases.
57. Margaret Hague Maternity Hospital, Jersey City; Hudson County Tuberculosis Hospital and Sanatorium, Secaucus.
58. Margaret Hague Maternity Hospital, Jersey City.
59. New Jersey State Hospital, Marlboro, psychiatry; Allenwood Sanatorium, Allenwood, tuberculosis.
61. Fairview Sanatorium, New Lisbon, tuberculosis.
62. Anthony N. Brady Maternity Hospital, Albany.
63. Kingston Avenue Hospital, Brooklyn, communicable diseases.
64. Children's Hospital, Buffalo, pediatrics.
65. Binghamton State Hospital, Binghamton, psychiatry.
66. Ulster County Tuberculosis Hospital, Kingston.
67. Jewish Maternity Hospital, New York City.
68. New York State Hospital, Ray Brook, tuberculosis.
69. Perth Amboy General Hospital, Perth Amboy, N. J., obstetrics, gynecology, pediatrics.
70. Syracuse Memorial Hospital, City Hospital, Syracuse Psychopathic Hospital, obstetrics, communicable diseases, psychiatry.
71. Forsyth County Sanatorium, Winston-Salem, tuberculosis.
72. Cass County Hospital, Fargo, surgery, obstetrics.
73. Children's Hospital, Akron, pediatrics.
74. Molly Stark Sanatorium, Canton, tuberculosis; Massillon State Hospital, Massillon, psychiatry.
75. Children's Hospital, Cincinnati General Hospital, pediatrics, obstetrics.
76. Children's Hospital, Cincinnati, pediatrics.
77. Hamilton County Tuberculosis Sanatorium, Hamilton County Home and Chronic Disease Hospital, Cincinnati.
78. Longview State Hospital, Cincinnati, psychiatry.
79. Cincinnati General Hospital, pediatrics, otolaryngology.
80. City Hospital, Cleveland, psychiatry.
81. St. Ann's Maternity Hospital, Cleveland.
82. Children's Hospital, Columbus, pediatrics.
83. Starling-Ohio University Hospital, Children's Hospital, Columbus, obstetrics, pediatrics.
84. Stillwater Sanatorium, Dayton, tuberculosis.
85. Shriners Hospital for Crippled Children, Portland, orthopedics.
86. University of Oregon Medical School Hospitals include Multnomah Hospital and Doernbecher Memorial Hospital for Children.
87. Allentown State Hospital, psychiatry.
88. Hospital of the University of Pennsylvania, Philadelphia, obstetrics.
89. Philadelphia Hospital for Contagious Diseases.
90. Children's Hospital of the Mary J. Drexel House, Philadelphia, pediatrics.
91. Henry Phipps Institute of the University of Pennsylvania, Philadelphia, tuberculosis.
92. Children's Hospital, Philadelphia, pediatrics.
93. Shriners Hospital for Crippled Children and Philadelphia Hospital for Contagious Diseases.
94. Pennsylvania Hospital, Department for Mental and Nervous Diseases, Philadelphia.
95. Municipal Hospital for Contagious Diseases, Pittsburgh.
96. Rosalia Foundling and Maternity Hospital and Municipal Hospital for Contagious Diseases, Pittsburgh.
97. Elizabeth Steel Magee Hospital, Children's Hospital, and Eye and Ear Hospital, Pittsburgh.
99. Berks County Tuberculosis Sanatorium, Reading.
100. Scranton State Hospital, obstetrics.
101. Providence Lying-in Hospital.
102. Willard Parker Hospital, New York City, pediatrics.
103. Bradford Memorial Hospital for Babies, Dallas, pediatrics.
104. Houston Tuberculosis Hospital.
105. Gulf, Colorado and Santa Fe Hospital and the Scott and White Hospital, affiliated, furnish one internship.
106. Utah State Hospital, Provo, psychiatry.
107. Norfolk Protestant Hospital, Florence Crittenton Home, and Children's Clinic of the Kings Daughters, Norfolk, obstetrics, pediatrics.
108. Pine Camp Hospital, Brook Hill, tuberculosis.
109. Blue Ridge Sanatorium, Charlottesville, tuberculosis.
110. King County Tuberculosis Hospital, Seattle.
111. Includes service in King County Hospital, Unit No. 2.
112. King County Hospital Unit No. 1, outpatient service.
113. Children's Orthopedic Hospital and Florence Crittenton Home, Seattle, orthopedics, pediatrics, obstetrics, outpatient service.
114. Firland Sanatorium and Isolation Hospital, Richmond Highlands, tuberculosis; Children's Orthopedic Hospital, Seattle, pediatrics, orthopedics.
115. King County Hospital, Unit No. 1, obstetrics, gynecology, pediatrics.
116. Edgecliff Sanatorium, Spokane, tuberculosis.
117. Edgecliff Sanatorium, Salvation Army Women's Hospital and Home, Florence Crittenton Home, tuberculosis, obstetrics.
118. Milwaukee Children's Hospital, South View Hospital, Milwaukee, pediatrics, communicable diseases; Milwaukee Sanitarium, Wauwatosa, psychiatry.
119. Milwaukee Children's Hospital, pediatrics.
120. Salvation Army Martha Washington Women's Home and Hospital, Wauwatosa, obstetrics.
121. South View Hospital, Milwaukee, communicable diseases.
122. Kaukeolani Children's Hospital, Honolulu, pediatrics.
125. Santol Tuberculosis Sanatorium, Santol; San Lazaro Hospital, Manila, and Insular Psychopathic Hospital, San Felipe Neri.

HOSPITALS APPROVED FOR RESIDENCIES IN SPECIALTIES

By the Council on Medical Education and Hospitals

The following hospitals, conforming to the standards of the Council, furnish acceptable residencies in the several specialties designated. Applicants are required to present evidence of graduation from an approved medical school and completion of at least one year of approved internship. In a few cases, equivalent experience in practice is accepted in lieu of preliminary hospital experience.

Regulations for Certification: It is important to emphasize that residencies alone are not necessarily sufficient preparation for the practice of a specialty. Other types of training are also available and may be required. Candidates should acquaint themselves with the requirements by direct correspondence with the secretaries of the examining boards.

Statistical Data: The statistical data have been obtained from annual reports covering the calendar year 1936. In a few instances earlier reports have been consulted. In most cases, this information is supplemented in the Council's files by inspection reports and by comments received from residents who have completed the listed service. The data should be examined with the following considerations in mind:

Chief of Service: It is required that there be an organized and qualified staff in the department offering residencies. The names listed are those most recently reported as departmental chairmen. In university hospitals, professors usually are given. Blank spaces indicate recent unconfirmed changes or supervision is supplied by chiefs on parallel or rotating assignments. For credentials, consult the American Medical Directory.

Inpatients: The figures refer to total inpatients treated in the specialty. Exceptions are in anesthesia, radiology and pathology where total hospital admissions are used. In obstetrics, some hospitals include new-borns, others do not.

Per Cent Free: An index to charity work performed, although in every instance the majority of patients are available for instruction.

Outpatients: Where available, the service is nearly always required.

Residencies, Assistant Residencies and Length of Appointment: Information supplied indicates whether progressive services are available and over what period of time. The eldest in point of service is the resident and others assistant residents whether so designated by the hospital or not. Senior internships in specialties are classed as assistant residencies.

Salary: It is advisable to confirm the quoted figure when applying. Unless otherwise indicated, compensation includes room and board. In fellowships, the hospital usually supplies maintenance only; the stipend is provided from other sources.

Deaths and Autopsies: These are reported for the specialties. In anesthesia, pathology and radiology, figures are given for the entire hospital. Some obstetrical services include new-born deaths and autopsies.

Important: All hospitals approved for residencies submit names of residents to the office of the Council for permanent credit and registration. It is in the interest of every house officer to assure himself that his name is properly recorded and that the correct dates of all appointments are submitted.

HOSPITALS, 438; RESIDENCIES, 3,202

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Apply Before	Service Begins	Available Training (Months)	Deaths	Autopsies
ANESTHESIA													
University of Chicago Clinics	Chicago	H. Livingstone	7,640	17	....	None	1	2	1/1	7/1	24	256	180
Methodist Episcopal Hospital	Indianapolis	J. M. Whitehead	19,505	10	....	$100	1	2	1/1	7/1	24	580	145
Massachusetts General Hospital	Boston	H. K. Beecher	7,931	48	....	$42	1	0	Any time	7/1	12	700	336
Jersey City Hospital	Jersey City, N. J.		10,554	90	....	None	2	0	5/1	7/1	12	967	379
Bellevue Hospital	New York City	E. A. Rovenstine	62,112	100	....	$50	12	0	Any time	Varies	36	3,485	1,698
Metropolitan Hospital	New York City	G. H. Van Gilluwe	11,830	100	....	$100	3	0	5/1	7/1	12	1,308	216
N. Y. Polyclinic Med. School and Hosp.	New York City	C. S. Hunt	7,564	16	....	$101	1	2	1/1&7/1	1/1&11/1	24	215	45
Grasslands Hospital	Valhalla, N. Y.	F. W. Bowers and R. B. Hammond	6,414	90	....	$95	1	0	4/1	7/1	12	466	291
State University and Crippled Children's Hospitals	Oklahoma City	F. J. Bolend	6,079	67	....	$50	3	0	1/1	7/1	12	333	189
Hahnemann Hospital	Philadelphia	W. T. Killian	12,135	47	....	$75	1	0	5/1	9/1	12	582	216
Philadelphia General Hospital	Philadelphia	R. S. Ruth	21,175	95	....	$100	1	0	7/1	7/1	12	3,828	1,967
Rhode Island Hospital	Providence, R. I.	F. H. Matthews	10,406	40	....	$50	1	0	Any time	Varies	12	758	351
State of Wisconsin General Hospital	Madison	R. M. Waters	11,253	88	....	$25	1	3	Any time	7/1	36	355	245
CARDIOLOGY													
Indiana University Hospitals	Indianapolis	G. S. Bond	.....	83	Yes	$33	1	0	2/1	7/1	12	...	...
Pennsylvania Hospital[1]	Philadelphia	W. D. Stroud	.....	31	Yes	$33	1	0	Any time	7/1	12	...	...
St. Francis Hospital	Pittsburgh	A. P. D'Zamura	202	14	Yes	$50	1	0	11/1	7/1	12	...	...
Rhode Island Hospital	Providence, R. I.	F. T. Fulton	2,216	40	Yes	$50	1	0	Any time	Varies	12	...	...
COMMUNICABLE DISEASES													
Los Angeles County Hospital	Los Angeles		3,761	100	....	$175	3	0	6/1&12/1	1/1&7/1	12	318	84
Hospital for Children	San Francisco	E. B. Shaw	264	10	....	$50	1	0	1/1	7/1	12	...	...
Municipal Hospitals	Hartford, Conn.	C. L. Thenebe	528	100	....	$119	1	0	1/1	7/1	12	31	7
Municipal Contagious Disease Hosp.	Chicago	A. L. Hoyne	3,698	100	....	$100	8	0	Any time	Varies	12	180	142
Boston City Hospital	Boston	E. H. Place	1,651	94	....	$25	1	0	Any time	7/1	12	...	...
Belmont Hospital	Worcester, Mass.	M. S. Holmes	537	100	....	$133	1	1	Any time	Varies	24	12	3
Herman Kiefer Hospital	Detroit	H. U. Estabrook	3,360	97	....	$125	4	0	1/1	7/1	12	208	92
Kansas City General Hospital	Kansas City, Mo.	P. F. Stookey	619	100	....	$80	1	0	1/1	7/1	12	36	34
City Isolation Hospital	St. Louis	H. J. Ullrich	1,860	98	....	$75	1	0	4/1	7/1	12	115	40
Essex County Hosp. for Contag. Dis.	Belleville, N. J.	E. L. Smith	3,428	95	....	$50	2	0	5/1	7/1	12	106	38
Kingston Avenue Hospital	Brooklyn	I. H. Scheffer	3,500	100	....	$100	7	0	5/1&11/1	1/1&7/1	12	113	46
Queens General Hospital	Jamaica, N. Y.	W. C. A. Steffen and C. Boettiger	885	100	....	$111	2	0	1/1	7/1	12	20	8
Willard Parker Hospital	New York City	B. W. Hamilton	5,531	100	....	$100	8	0	Any time	1/1&7/1	18	81	39
City Hospital	Cleveland	H. J. Gerstenberger	1,761	97	....	$37	2	0	1/1	1/1&7/1	12	110	...
DERMATOLOGY-SYPHILOLOGY													
Los Angeles County Hospital	Los Angeles	F. D. Lovejoy	588	100	Yes	$10	1	1	6/1&12/1	1/1&7/1	24	6	4
University of California Hospital	San Francisco	H. Morrow	64	...	Yes	$25	1	0	2/15	7/1	36	1	0
University of Chicago Clinics	Chicago	S. W. Becker	.....	17	Yes	None	1	0	1/1	7/1	12	2	2
Massachusetts General Hospital	Boston	C. G. Lane	267	48	Yes	$42	1	1	Any time	7/1	24	...	...
University Hospital	Ann Arbor, Mich.	U. J. Wile	1,749	79	Yes	$25	1	3	12/1	7/1	48	12	4
Minneapolis General Hospital	Minneapolis	H. E. Michelson	236	100	Yes	None	1	0	Any time	Varies	36	4	1

Numerical and other references will be found on page 707.

109
37

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Apply Before	Service Begins	Available Training (Months)	Deaths	Autopsies
DERMATOLOGY-SYPHILOLOGY—(Continued)													
University Hospitals [1]	Minneapolis	H. E. Michelson	113	16	Yes	None	1	0	Any time	Varies	36	3	3
Barnard Free Skin and Cancer Hosp.	St. Louis	M. F. Engman	37	100	Yes	$25	1	0	1/1	7/1	12	3	2
Kings County Hospital	Brooklyn	A. Potter	668	100	Yes	$100	1	0	2/1	9/1	12	23	4
Buffalo City Hospital [2]	Buffalo	E. D. Osborne	197	67	Yes	....	1	1	11/1	7/1	..	10	6
Bellevue Hospital	New York City	H. Fox	.....	100	Yes	$15	1	1	1/1&7/1	1/1&7/1	18	...	...
Metropolitan Hospital	New York City	F. M. Dearborn and S. Carleton	424	100	Yes	$75	1	0	2/1	7/1	12	30	2
Montefiore Hosp. for Chronic Diseases	New York City	F. Wise	22	86	Yes	$25	1	0	1/1	7/1	12	0	0
N. Y. Post-Grad. Med. School & Hosp.	New York City	G. M. MacKee	210	30	Yes	None	1	2	1/1&7/1	1/1&7/1	24	3	0
Cincinnati General Hospital	Cincinnati	E. B. Tauber	510	87	Yes	*	2	0	2/15	7/1	12	31	4
City Hospital	Cleveland	H. N. Cole	536	97	Yes	$50	2	0	1/1	1/1&7/1	12	16	...
University Hospitals	Cleveland	H. N. Cole	193	30	Yes	$35	1	1	1/1	7/1	24	2	...
Skin and Cancer Hospital	Philadelphia	A. Strickler	180	17	Yes	$30	1	1	Any time	1/1&7/1	24	15	2
University of Virginia Hospital	University	D. C. Smith	158	26	Yes	None	1	1	12/1	7/1	36	1	0
EPILEPSY													
Monson State Hospital	Palmer, Mass.	M. B. Hodskins	1,486	...	No	$150	1	0	Any time	Varies	12	79	24
Craig Colony	Sonyea, N. Y.	W. T. Shanahan	2,877	94	No	$150	1	0	Any time	Varies	12	164	64
FRACTURES													
City of Detroit Receiving Hospital	Detroit	A. D. LaFerte	1,458	100	Yes	$83	1	1	3/1	7/1	24	...	...
Rhode Island Hospital	Providence	M. S. Danforth	602	40	No	$50	1	0	Any time	Varies	12	27	...
GYNECOLOGY (Also see Obstetrics-Gynecology)													
Los Angeles County Hospital	Los Angeles	W. H. Smith	1,848	100	Yes	$10	3	0	6/1&12/1	1/1&7/1	18	17	11
Passavant Memorial Hospital	Chicago	A. H. Curtis	892	10	Yes	None	1	0	1/1&7/1	1/1&7/1	12	4	2
Indiana University Hospitals	Indianapolis	F. C. Walker	787	83	Yes	$35	1	0	2/1	7/1	12	7	5
Touro Infirmary	New Orleans	H. E. Miller	1,046	52	Yes	$25	1	0	1/1	7/1	12	...	...
Johns Hopkins Hospital	Baltimore	T. S. Cullen	1,345	40	Yes	None	1	4	6/1	9/1	48	15	...
University Hospital	Baltimore	J. M. Hundley, Jr.	753	47	Yes	None	1	1	12/1	7/1	24	12	4
Free Hospital for Women	Brookline, Mass.	F. A. Pemberton	2,134	80	Yes	$83	1	0	1/1	1/1	12	20	12
Jersey City Hospital	Jersey City, N. J.	C. B. Kelly and J. M. Rector	730	90	Yes	$100	1	0	3/1	7/1	1	20	3
Albany Hospital	Albany, N. Y.	A. J. Wallingford	1,882	60	Yes	$25	1	1	12/15	7/1	24	26	15
Buffalo City Hospital [2]	Buffalo	F. H. Long	206	67	Yes	....	1	1	11/1	7/1	..	14	6
Buffalo General Hospital [4]	Buffalo	J. E. King and D. C. McKenney	1,113	10	Yes	$25	1	0	11/1	7/1	12	26	14
Mount Sinai Hospital	New York City	R. T. Frank	.....	56	Yes	$50	1	1	Any time	1/1&7/1	18	...	...
N. Y. Post-Grad. Med. School & Hosp.	New York City	W. T. Dannreuther	476	30	Yes	$60	1	0	3/1	10/1	12	5	1
Syracuse Memorial Hospital	Syracuse, N. Y.	G. B. Broad	1,000	50	Yes	None	1	0	1/1	7/1	12	6	1
University Hospitals	Cleveland	A. H. Bill	1,418	30	Yes	$35	1	3	1/1	7/1	36	14	...
Starling-Loving University Hospital	Columbus, O.	F. Fletcher	374	55	Yes	$35	1	0	12/1	7/1	12	...	...
Graduate Hospital of the Univ. of Pa.	Philadelphia	W. R. Nicholson	603	36	Yes	None	1	0	1/1	7/1	12	17	7
Hospital of the Univ. of Pennsylvania	Philadelphia	F. E. Keene	1,212	31	Yes	None	1	0	1/1	9/1	12	9	5
Elizabeth Steel Magee Hospital	Pittsburgh	R. E. Hugrins	978	45	Yes	$42	1	1	1/1	8/1	24	23	10
John Gaston Hospital	Memphis, Tenn.	W. T. Black	735	95	Yes	$32	1	0	1/1	7/1	12	33	4
INDUSTRIAL SURGERY													
Indianapolis City Hospital	Indianapolis	.....	944	90	Yes	$30	1	0	4/1	7/1	12	40	16
MALIGNANT DISEASES													
Los Angeles County Hospital	Los Angeles	.....	814	100	Yes	$10	1	1	6/1&12/1	1/1&7/1	24	128	67
Albert Steiner Clinic for Cancer and Allied Diseases	Atlanta, Ga.	R. H. Fike	504	100	No	$100	2	0	6/1	7/1	12	33	33
Michael Reese Hospital	Chicago	M. Cutler	744	44	Yes	None	2	0	1/1&7/1	1/1&7/1	12	...	...
Collis P. Huntington Memorial Hosp. [3]	Boston	C. Aub and S. Warren	1,411	38	Yes	$45	3	0	Any time	Varies	..	14	9
Pondville Hospital at Norfolk	Walpole, Mass.	E. M. Daland	1,474	53	Yes	$150	7	0	Any time	Varies	12	248	166
Eloise Hospital (Dr. Wm. J. Seymour Hospital)	Eloise, Mich.	.....	373	100	Yes	$100	1	0	3/1	7/1	12	174	83
Barnard Free Skin and Cancer Hosp. [5]	St. Louis	C. M. Stronq	687	100	Yes	$25	2	0	1/1	7/1	12	33	17
Jersey City Hospital	Jersey City, N. J.	J. B. Faison	279	90	Yes	$75	1	0	1/1	7/1	12	35	1
Memorial Hospital for the Treatment of Cancer and Allied Diseases	New York City	J. Ewing	2,698	10	Yes	$125	1	7	Any time	1/1&7/1	36	166	167
New York City Cancer Institute Hosp.	New York City	.....	1,053	100	Yes	$70	4	0	1/1&7/1	1/1&7/1	16	564	223
Jeanes Hospital	Philadelphia	R. W. Teahan	579	24	Yes	$50	2	0	4/1	7/1	12	89	50
MAXILLOFACIAL SURGERY													
Graduate Hosp. of the Univ. of Pa. [6]	Philadelphia	R. H. Ivy	.....	36	Yes	None	1	0	1/1	7/1	12	...	...
MEDICINE													
Hillman Hospital	Birmingham, Ala.	J. S. McLester and H. S. Ward	2,206	100	Yes	$40	2	0	1/15	7/1	12	324	95
Employees' Hospital of the Tennessee Coal, Iron and Railroad Co.	Fairfield, Ala.	G. F. Walsh	1,708	...	Yes	$100	1	0	1/1	7/1	12	106	24
Fresno County General Hospital	Fresno, Calif.	R. B. Tupper	1,566	90	Yes	$65	1	0	1/1	7/1	12	290	86
Cedars of Lebanon Hospital	Los Angeles	H. H. Lissner	1,143	19	Yes	$75	1	0	12/1	7/1	12	...	54
Los Angeles County Hospital	Los Angeles	.....	9,788	100	Yes	$10	1	5	6/1&12/1	1/1&7/1	36	1,646	980
White Memorial Hospital	Los Angeles	D. D. Comstock	.....	2	Yes	$80	1	0	3/1	7/1	36	...	...
Alameda County Hospital	Oakland, Calif.	R. T. Sutherland and H. G. MacLean	3,631	100	No	$40	1	2	2/1	7/1	12	...	...
San Bernardino County Charity Hosp.	San Bernardino, Calif.	.....	300	100	No	$75	1	0	4/1	7/1	12	75	33
San Diego County General Hospital	San Diego, Calif.	J. C. Schlappi	1,629	100	Yes	$75	2	0	4/1	7/1	12	...	...
Hospital for Children	San Francisco	R. L. Ash	414	10	Yes	$35	1	0	1/1	7/1	12	...	...
Mount Zion Hospital	San Francisco	L. H. Briggs	1,122	17	Yes	$50	1	0	1/1	6/15	12	128	48
San Francisco Hospital	San Francisco	G. D. Barnett and L. H. Briggs	2,564	100	No	$25	2	5	2/1	7/1	24	624	...
Stanford University Hospitals	San Francisco	A. L. Bloomfield	1,974	4	Yes	$25	1	5	1/1	7/1	24	163	54
University of California Hospital	San Francisco	W. J. Kerr	1,270	...	Yes	$25	1	5	2/15	7/1	24	57	33
Santa Clara County Hospital	San Jose, Calif.	.....	3,383	100	Yes	$75	1	0	1/1	7/1	12	111	...
Colorado General Hospital	Denver	J. J. Waring	1,800	80	Yes	$75	1	0	12/1	7/1	12	...	...
Denver General Hospital	Denver	.....	1,736	100	No	$50	1	0	Any time	7/1	12	...	...
Grace Hospital	New Haven, Conn.	S. J. Goldberg	472	10	Yes	$60	1	0	1/1	7/1	12	117	36
New Haven Hospital	New Haven, Conn.	F. G. Blake	1,117	43	Yes	....	1	4	12/15	7/1	..	188	122

Numerical and other references will be found on page 707.

V 10
1937

MEDICINE—(Continued)		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Apply Before	Service Begins	Available Training (Months)	Deaths	Autopsies
Central Disp. and Emergency Hospital	Washington, D. C.	H. M. Kaufman	2,441	21	Yes	$50	1	1	4/1	7/1	24	...	...
Freedmen's Hospital (col.)	Washington, D. C.	L. T. Gager	648	86	Yes	$52	1	0	3/1	7/1	12	59	12
Gallinger Municipal Hospital	Washington, D. C.	W. N. Yater	2,815	100	No	$30	6	0	1/1	7/1	12	537	167
Garfield Memorial Hospital	Washington, D. C.	L. C. Ecker	2,235	17	Yes	$50	1	0	12/1	7/1	12	...	...
Grady Hospital	Atlanta, Ga.	C. W. Strickler	3,225	100	Yes	$50	2	0	1/1	7/1	12	676	139
University Hospital	Augusta, Ga.	V. P. Sydenstricker	2,138	30	Yes	$50	3	0	11/1	7/1	12	234	109
Cook County Hospital	Chicago	F. Tice	17,814	100	No	None	4	0	1/1&7/1	1/1&7/1	12	3,704	2390
Passavant Memorial Hospital	Chicago	Chas. A. Elliott	991	10	Yes	None	2	0	1/1&7/1	1/1&7/1	12	35	15
Presbyterian Hospital	Chicago	E. E. Irons	2,612	24	Yes	$50	1	0	Any time	7/1	24	119	67
Provident Hospital (col.)	Chicago	H. V. Wilburn	484	11	Yes	$50	1	0	1/1	9/1	12	68	18
Research and Educational Hospital	Chicago	R. W. Keeton	758	100	Yes	$50	2	0	1/1	7/1	24	59	53
St. Luke's Hospital	Chicago	...	1,483	6	Yes	None	2	0	1/1	7/1	12	74	39
University of Chicago Clinics	Chicago	G. F. Dick	2,989	17	Yes	None	1	4	1/1	7/1	24	103	65
Wesley Memorial Hospital [1]	Chicago	W. H. Holmes	703	34	No	$75	1	0	Any time	1/1	12	27	14
Evanston Hospital	Evanston, Ill.	J. G. Carr	1,979	6	Yes	$83	1	0	4/1	7/1	12	109	72
Indiana University Hospitals	Indianapolis	J. O. Ritchey	809	83	Yes	$33	2	0	2/1	7/1	12	73	37
University Hospitals	Iowa City	F. M. Smith	2,400	24	Yes	$30	2	4	1/1	7/1	36	130	77
University of Kansas Hospitals	Kansas City, Kan.	R. H. Major	847	50	Yes	$45	1	2	12/1	7/1	36	84	62
Louisville City Hospital	Louisville, Ky.	J. W. Moore	2,321	90	Yes	$14	1	7	3/1	7/1	36	473	116
Charity Hospital	New Orleans	...	14,125	100	Yes	$37	1	2	7/1	7/1	24	1,551	458
Touro Infirmary	New Orleans	I. I. Lemann	1,986	30	Yes	$25	3	0	1/1	7/1	24	...	...
Baltimore City Hospitals	Baltimore	T. R. Boggs	2,016	100	No	$12	1	5	1/1	7/1	24	554	250
Church Home and Infirmary	Baltimore	...	370	30	Yes	$25	1	0	12/1	7/1	12	35	9
Johns Hopkins Hospital	Baltimore	W. T. Longcope	2,781	49	Yes	None	1	5	6/1	9/1	60	232	...
Maryland General Hospital	Baltimore	F. R. Freeman	501	44	Yes	$35	1	0	11/1	7/1	12	119	13
Mercy Hospital	Baltimore	M. C. Pincoffs	889	51	Yes	$25	1	1	1/1	7/1	24	119	19
Provident Hosp. and Free Disp. (col.)	Baltimore	T. P. Sprunt	653	79	Yes	$25	1	0	5/1	10/15	12	...	...
St. Agnes' Hospital	Baltimore	...	724	38	Yes	...	1	0	11/1	7/1	12	...	...
St. Joseph's Hospital	Baltimore	H. M. Stein and C. Smink	560	42	Yes	None	1	0	12/1	7/1	24	77	31
Sinai Hospital	Baltimore	C. R. Austrian	1,049	38	Yes	$47	1	2	1/1	7/1	24	141	40
South Baltimore General Hospital	Baltimore	...	311	44	Yes	$50	1	0	12/1	7/1	12	81	41
Union Memorial Hospital	Baltimore	...	1,353	24	Yes	$12	2	0	1/1	7/1	12	...	...
University Hospital	Baltimore	M. C. Pincoffs	1,238	47	Yes	None	1	1	12/1	7/1	24	150	74
West Baltimore General Hospital	Baltimore	J. N. Zierler	425	33	No	$20	1	0	1/1	7/1	12	55	5
Beth Israel Hospital	Boston	H. Linenthal	1,636	39	Yes	*	1	0	1/1	7/1	24	126	68
Boston City Hospital [2]	Boston	...	9,655	94	Yes	$42	9	0	Any time	9/1	12	1,189	485
Massachusetts General Hospital	Boston	J. H. Means	1,991	45	Yes	$42	5	5	Any time	1/1&7/1	36	...	...
Massachusetts Memorial Hospitals	Boston	R. Fitz	1,059	27	Yes	$01	1	2	1/1	7/1	36	81	...
Peter Bent Brigham Hospital	Boston	H. A. Christian	2,030	57	Yes	$42	1	6	Any time	Varies	48	...	...
University Hospital	Ann Arbor, Mich.	C. C. Sturgis	3,094	79	Yes	$25	8	0	12/1	7/1	36	231	158
Alexander Blain Hospital	Detroit	R. L. Fisher	324	0	Yes	$75	1	0	1/1	7/1	12	...	...
City of Detroit Receiving Hospital	Detroit	...	5,181	100	Yes	$83	1	5	3/1	7/15	36	...	...
Grace Hospital	Detroit	J. T. Watkins	2,330	31	Yes	$50	1	0	4/1	9/1	12	224	65
Harper Hospital	Detroit	H. A. Freund	2,647	11	Yes	$25	1	6	2/1	7/1	36	...	...
Henry Ford Hospital	Detroit	F. J. Sladen	...	..	Yes	$110	1	18	1/1	9/1	48	94	52
Providence Hospital	Detroit	...	1,858	12	No	$100	1	0	12/1	7/1	12	239	...
Eloise Hospital (Dr. Wm. J. Seymour Hospital)	Eloise, Mich.	...	...	100	No	$37	1	1	3/1	7/1	36	639	179
Hurley Hospital	Flint, Mich.	M. S. Chambers	1,145	60	No	$100	1	0	1/1	7/1	12	...	...
Minneapolis General Hospital [1]	Minneapolis	G. E. Fahr	2,528	100	Yes	$25	1	5	1/1&7/1	1/1&7/1	36	416	141
University Hospitals [1]	Minneapolis	J. C. McKinley	1,097	Yes	Yes	$50	1	3	1/1	7/1	36	160	99
Ancker Hospital	St. Paul	A. Hoff and A. R. Hall	3,348	98	Yes	$50	6	0	3/1	7/1	12	362	217
St. Louis County Hospital	Clayton, Mo.	D. E. Kauffman	960	98	Yes	$100	1	0	3/1	7/1	12	197	77
Barnes Hospital	St. Louis	D. P. Barr	3,435	17	Yes	$25	1	3	12/1	7/1	24	151	95
Jewish Hospital	St. Louis	L. Sale	1,865	31	No	$42	1	1	12/1	7/1	24	161	35
St. Louis City Hospital	St. Louis	...	5,270	100	Yes	$75	2	4	12/1	7/1	24	...	...
St. Louis City Hospital No. 2 (col.)	St. Louis	D. L. Sexton	1,775	100	Yes	$100	1	4	7/1	7/1	24	402	...
St. Luke's Hospital	St. Louis	W. Baumgarten	885	14	Yes	$50	1	0	12/1	7/1	12	86	16
St. Mary's Group of Hospitals	St. Louis	R. A. Kinsella	2,239	49	Yes	$25	1	6	3/1	7/1	24	175	88
Jersey City Hospital	Jersey City, N. J.	...	3,903	50	Yes	$75	1	0	1/1	7/1	12	700	89
Albany Hospital	Albany, N. Y.	I. W. Gorham	1,442	60	Yes	$15	1	3	12/15	7/1	36	149	100
Coney Island Hospital	Brooklyn	P. I. Nash	2,206	100	Yes	$100	1	0	6/1	7/1	12	236	88
Cumberland Hospital	Brooklyn	H. Joachim	1,104	100	No	$100	1	0	3/1	7/1	12	175	72
Kings County Hospital	Brooklyn	B. F. Corwin and G. A. Merrill	13,404	100	Yes	None	6	0	6/1&11/1	1/1&7/1	12	2,752	573
Long Island College Hospital	Brooklyn	T. Howard	1,327	20	Yes	$22	1	1	1/1	7/1	24	157	62
Norwegian Lutheran Deaconesses' Home and Hospital	Brooklyn	...	666	12	Yes	None	1	0	1/1	7/1	12	...	...
Buffalo City Hospital [1]	Buffalo	A. Levitt	1,723	67	Yes	...	1	1	11/1	7/1	24	328	169
Buffalo General Hospital	Buffalo	J. G. Bissell	2,473	10	Yes	$25	1	0	11/1	7/1	24	326	150
Millard Fillmore Hospital	Buffalo	J. M. Mesmer	846	22	Yes	$25	1	0	11/15	7/1	12	120	43
Clifton Springs Sanitarium and Clinic	Clifton Springs, N. Y.	S. A. Munford	1,802	10	No	$25	1	0	1/1	7/1	36	38	13
Queens General Hospital	Jamaica, N. Y.	C. Boettiger	2,200	100	Yes	$15	1	1	1/1	7/1	24	431	193
Charles S. Wilson Memorial Hospital	Johnson City, N. Y.	...	940	0	Yes	$75	1	0	12/1	7/1	12	71	37
Metropolitan Life Insurance Co. Sanat.	Mt. McGregor, N. Y.	W. H. Ordway	537	100	No	$100	1	0	Any time	Varies	12	7	5
Bellevue Hospital	New York City	...	11,453	100	Yes	...	3	8	Any time	1/1&7/1	12	...	...
Flower-Fifth Avenue Hospital	New York City	L. J. Boyd	1,002	44	Yes	$50	1	0	12/1	7/1	12	89	22
Metropolitan Hospital	New York City	L. J. Boyd	2,376	100	Yes	$100	2	0	3/1	7/1	12	408	108
Montefiore Hosp. for Chronic Diseases	New York City	...	802	80	Yes	$25	4	0	3/1&9/1	1/1&7/1	12	114	80
Mount Sinai Hospital	New York City	G. Baehr and B. S. Oppenheimer	...	56	Yes	$125	2	0	Any time	1/1&7/1	12	...	...
New York Hospital	New York City	E. F. DuBois	1,398	5	Yes	None	1	7	1/1	7/1	60	136	83
N. Y. Post-Grad. Med. School & Hosp.	New York City	W. G. Lough	1,542	30	Yes	$60	1	1	1/1	7/1	24	101	30
Presbyterian Hospital	New York City	W. W. Palmer	1,655	30	Yes	$42	4	0	12/1	7/1	12	263	137
Geneseo Hospital	Rochester, N. Y.	D. B. Jewett	915	50	Yes	$50	1	0	12/1	7/1	12	126	45
Rochester General Hospital	Rochester, N. Y.	D. A. Haller	1,592	60	Yes	$50	1	0	4/1	7/1	12	193	105
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	W. S. McCann	3,676	58	Yes	$42	1	4	1/1	7/1	24	308	250
Hospital of the Good Shepherd	Syracuse, N. Y.	E. C. Reifenstein	1,693	2	No	$40	1	1	12/1	7/1&8/1	24	...	...
Grasslands Hospital	Valhalla, N. Y.	M. DeM. Touart	1,387	90	Yes	$75	1	1	10/1&4/1	1/1&7/1	24	136	89
Duke Hospital	Durham, N. C.	F. M. Hanes	4,308	64	Yes	$42	1	5	1/1	7/1	48	134	101
Watts Hospital	Durham, N. C.	W. R. Stanford	2,428	23	Yes	$50	1	0	1/1	7/1	12	168	18
City Memorial Hospital	Winston-Salem, N. C.	K. F. Pfohl	634	42	Yes	$50	2	0	1/1	7/1	12	124	29
City Hospital [3]	Akron, O.	...	3,765	40	Yes	$25	1	0	1/1	7/1	12	235	90
Cincinnati General Hospital	Cincinnati	M. A. Blankenhorn	797	5	Yes	$75	1	0	12/1	7/1	12	114	24
Deaconess Hospital	Cincinnati	...	3,169	87	Yes	*	1	12	2/15	7/1	24	857	411
Good Samaritan Hospital	Cincinnati	...	3,189	5	No	$25	2	0	1/1	7/1	12	190	34
Jewish Hospital [4]	Cincinnati	...	967	30	Yes	$45	1	2	12/1	7/1	24	115	34

Numerical and other references will be found on page 707.

		Chief of Service	Inp. Cases Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Apply Before	Service Begins	Available Training (Months)	Deaths	Autopsies
MEDICINE—(Continued)													
City Hospital	Cleveland	R. W. Scott	2,423	97	Yes	$50	1	5	1/1	1/1&7/1	24	747	...
Mount Sinai Hospital	Cleveland	S. S. Berger	1,258	23	No	$60	1	0	12/1	7/1	12	147	34
St. Alexis Hospital	Cleveland		1,229	25	No	$60	1	0	12/1	7/1	12	155	30
St. John's Hospital	Cleveland	R. K. Updegraff	879	18	No	$25	1	0	12/1	7/1	12	125	38
St. Luke's Hospital	Cleveland	W. C. Stoner	1,914	18	Yes	$25	1	1	12/1	7/1	24	186	34
University Hospitals [5]	Cleveland	J. T. Wearn	2,915	30	Yes	$35	1	11	1/1	7/1	36	288	157
Starling-Loving University Hospital	Columbus, O.	C. A. Doan	1,114	55	Yes	$25	1	3	12/1	7/1	36	...	...
Miami Valley Hospital	Dayton, O.		2,140	28	No	$75	1	0	12/1	7/1	12	...	...
St. Elizabeth's Hospital	Youngstown, O.	E. W. Coe	1,344	30	No	$50	1	0	12/1	7/1	12	189	39
State University and Crippled Children's Hospitals	Oklahoma City	G. A. LaMotte	854	67	Yes	$50	2	0	1/1	7/1	12	99	55
Univ. of Oregon Med. School Hosps.	Portland	L. Selling	2,872	100	Yes	$30	1	1	1/1	7/1	24	430	225
Abington Memorial Hospital	Abington, Pa.	H. B. Wilmer	1,116	22	Yes	None	1	0	1/1	7/1	12	136	63
Geo. F. Geisinger Memorial Hospital	Danville, Pa.	C. E. Ervin	1,021	23	Yes	$15	1	0	2/1	7/1	12	65	22
Germantown Dispensary and Hospital	Philadelphia		726	17	Yes	$120	1	0	1/1	7/1	12	101	36
Graduate Hospital of the Univ. of Pa.	Philadelphia	G. M. Piersol	957	36	Yes	None	1	0	1/1	7/1	12	86	40
Hospital of the Univ. of Pennsylvania	Philadelphia	A. Stengel	1,719	31	Yes	None	1	0	1/1	9/1	12	98	82
Jewish Hospital	Philadelphia	J. C. Doane	1,295	32	No	None	1	0	3/1	6/15	12	177	89
Pennsylvania Hospital	Philadelphia	D. Farley	1,655	31	Yes	$42	2	0	Any time	7/1	12	228	117
Philadelphia General Hospital	Philadelphia		5,214	95	Yes	...	..	..	7/1	7/1	12	...	...
Allegheny General Hospital	Pittsburgh		885	55	No	$81	1	0	2/1	7/1	12	102	38
Elizabeth Steel Magee Hospital [5]	Pittsburgh	J. D. Heard	808	46	Yes	$42	1	1	1/1	8/1	24	65	38
Mercy Hospital [5]	Pittsburgh	W. W. G. Maclachlan	2,008	35	Yes	$112	3	0	1/1	7/1	12	...	...
St. Francis Hospital	Pittsburgh		1,108	14	Yes	$75	1	0	11/1	7/1	12	...	...
Reading Hospital	Reading, Pa.		740	48	Yes	$83	1	0	1/1	7/1	12	165	112
Robert Packer Hospital	Sayre, Pa.	S. D. Conklin	2,240	61	Yes	$58	1	0	4/1	7/1	24	153	69
Roper Hospital	Charleston, S. C.	R. Wilson	1,567	78	Yes	$40	1	0	1/1	7/1	12	264	98
John Gaston Hospital	Memphis, Tenn.	L. Leroy	2,389	95	Yes	$32	2	0	1/1	7/1	12	494	58
Nashville General Hospital	Nashville, Tenn.		1,138	90	Yes	$35	1	1	12/1	7/1	24	270	107
Vanderbilt University Hospital	Nashville, Tenn.	H. J. Morgan	1,154	32	Yes	$35	1	3	3/1	7/1	24	161	59
Baylor University Hospital	Dallas, Tex.	H. M. Winans	2,096	29	Yes	$65	1	1	4/1	7/1	24	147	22
John Sealy Hospital	Galveston, Tex.	C. T. Stone	1,230	60	Yes	None	1	0	12/1	7/15	12	109	120
Norfolk General Hospital	Norfolk, Va.	A. B. Hodges	1,519	30	Yes	$50	1	0	1/1	7/1	12	...	...
Medical College of Va., Hosp. Division	Richmond	W. B. Porter	1,736	30	Yes	$50	1	3	2/1	7/1	24	368	149
University of Virginia Hospital	University	J. C. Flippin	1,760	26	Yes	None	1	1	12/1	7/1	24	123	43
State of Wisconsin General Hospital	Madison	W. S. Middleton	...	80	Yes	$25	1	6	Any time	7/1	36	...	...
St. Joseph's Hospital	Milwaukee	F. D. Murphy	1,521	.	Yes	$100	1	0	1/1	7/1	12	194	55
Milwaukee County General Hospital	Wauwatosa, Wis.	T. J. Howard	5,030	100	Yes	$100	1	2	5/1	7/16	24	724	209
MENTAL DEFICIENCIES													
Michigan Home and Training School	Lapeer, Mich.	R. L. Dixon	1,458	100	Yes	$150	2	0	Any time	Varies	36	80	25
METABOLIC DISEASES													
Philadelphia General Hospital	Philadelphia	E. S. Dillon	640	95	Yes	$100	1	0	7/1	7/1	12	...	...
MIXED [6]													
St. Vincent's Hospital	Birmingham, Ala.		3,485	6	No	$65	..	..	1/1	7/1	24	112	32
Fairmont Hosp. of Alameda County	San Leandro, Calif.	B. A. Adams	1,155	100	No	$80	1	0	12/1	7/1	12	470	251
Riverside Hospital	Jacksonville, Fla.		1,059	10	Yes	$50	1	0	6/1	7/1	12	24	5
Eitel Hospital	Minneapolis		5,504	5	Yes	$80	1	0	1/1	7/1	12	107	19
Women's and Children's Hospital	Toledo, O.		2,329	3	Yes	$50	3	0	2/1	7/1	12	114	30
Medical Arts Hospital	Dallas, Tex.	E. H. Cary	3,084	0	No	$75	1	0	3/1	7/1	12	66	16
Chesapeake and Ohio Railway Hosp.	Clifton Forge, Va.	J. M. Emmett	3,000	45	Yes	$50	3	0	1/1	7/1	12	76	18
NEUROLOGY													
Los Angeles County Hospital	Los Angeles		1,154	100	Yes	$10	1	1	6/1	1/1	24	367	139
University of Chicago Clinics [5]	Chicago	P. Bailey	.....	17	Yes	$30	1	1	1/1	7/1	36	29	21
University Hospitals	Iowa City	C. E. Van Epps	830	87	Yes	*	1	1	1/1	7/1	24	22	16
Boston City Hospital	Boston	T. J. Putnam	564	94	Yes	None	1	10	Any time	7/1&9/1	36	0	0
Massachusetts General Hospital	Boston	J. B. Ayer	375	48	Yes	$42	1	0	Any time	7/1	12	...	...
University Hospital	Ann Arbor, Mich.	C. D. Camp	969	79	Yes	$25	1	0	12/1	7/1	12	25	12
Kings County Hospital	Brooklyn	O. C. Perkins	3,943	100	Yes	None	4	0	6/1&11/1	1/1&7/1	12	523	69
Bellevue Hospital	New York City	F. Kennedy	288	100	Yes	$85	1	2	Any time	7/1	24	...	...
Central Neurological Hospital	New York City	M. Neustaedter	1,143	100	Yes	$100	6	0	1/1&7/1	1/1&7/1	12	303	88
Lenox Hill Hospital	New York City	A. Yahraes	707	23	Yes	$50	1	0	1/1	7/1	12	12	3
Metropolitan Hospital	New York City	S. P. Jewett	175	100	Yes	$75	1	0	3/1	7/1	12	62	5
Montefiore Hosp. for Chronic Diseases	New York City	S. P. Goodhart	1,277	86	Yes	$25	1	2	3/1&10/1	1/1&7/1	18	43	30
Mount Sinai Hospital	New York City	I. Strauss	.....	56	Yes	.....	3	0	Any time	1/1&7/1	18	...	...
Neurological Institute of New York	New York City	F. Tilney	3,558	9	No	$40	1	11	Any time	Varies	36	166	85
Philadelphia Orthopaedic Hosp. and Infirmary for Nervous Diseases	Philadelphia	C. W. Burr	314	37	Yes	$40	1	0	Any time	7/1	12	8	3
Temple University Hospital [5]	Philadelphia	T. Fay	591	43	Yes	$30	1	0	1/1	7/1	36	54	24
NEUROPSYCHIATRY													
Compton Sanitarium	Compton, Calif.	G. E. Myers	340	...	No	$125	1	0	Any time	Varies	12	10	0
Stanford University Hospitals	San Francisco	G. S. Johnson	382	4	Yes	$25	1	2	1/1	7/1	24	2	0
University of California Hospital	San Francisco	M. B. Lennon and E. W. Twitchell	60	...	Yes	$25	0	2	2/15	7/1	12	0	0
Mendocino State Hospital	Talmage, Calif.	R. O. LeBaron	2,757	91	No	$50	2	0	Any time	Varies	36	126	27
Colorado Psychopathic Hospital [5]	Denver	F. G. Ebaugh	902	73	Yes	$100	1	7	2/1	9/1	36	19	15
Neuro-Psychiatric Institute of the Hartford Retreat [5]	Hartford, Conn.	C. C. Burlingame	631	...	No	...	9	0	Any time	Varies	36	36	6
Connecticut State Hospital	Middletown	R. L. Leak	3,184	100	No	$50	3	0	Any time	Varies	36	366	70
New Haven Hospital	New Haven, Conn.	E. Kahn	300	43	Yes	.....	1	4	12/15	7/1	36	5	5
Delaware State Hospital	Farnhurst, Del.	A. A. Tomlinson	1,062	85	Yes	$50	2	0	1/1	7/1	12	89	30
Gallinger Municipal Hospital	Washington, D. C.	D. P. Hickling	3,097	100	No	$30	1	0	1/1	7/1	12	117	32
St. Elizabeths Hospital	Washington, D. C.	R. W. Hall	5,429	100	No	$167	11	0	7/1&10/1	7/1	12	366	199
Cook County Hospital	Chicago	F. J. Gerty	5,870	100	No	None	3	0	1/1&7/1	1/1&7/1	12	134	70
Research and Educational Hospital	Chicago	H. D. Singer	113	100	Yes	$30	3	0	1/1	7/1	12	5	5
University of Chicago Clinics	Chicago	D. Slight	108	17	Yes	$30	1	1	1/1	7/1	24	0	0
Elgin State Hospital	Elgin, Ill.	C. F. Read	6,222	100	No	$60	1	0	Any time	Varies	12	428	143
Central State Hospital	Indianapolis	M. A. Bahr	2,228	90	No	$150	4	0	Any time	Varies	36	124	63
Indianapolis City Hospital	Indianapolis		567	90	Yes	$30	1	0	4/1	7/1	12	19	8
Logansport State Hospital	Logansport, Ind.	C. L. Williams	1,916	96	No	$135	2	0	Any time	Varies	36	126	30
Iowa State Psychopathic Hospital	Iowa City	A. H. Woods	427	82	Yes	$142	2	2	1/1	7/1	36	3	2

Numerical and other references will be found on page 707.

V 1
193

			Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Apply Before	Service Begins	Available Training (Months)	Deaths	Autopsies
NEUROPSYCHIATRY—Continued		Chief of Service											
Osawatomie State Hospital	Osawatomie, Kan.	R. M. Fellows	1,650	96	Yes	$75	2	0	1/1&7/1	1/1&7/1	12	186	30
Menninger Sanitarium	Topeka, Kan.	K. A. Menninger	150	0	Yes	$120[20]	4	0	Quart.	Quart.	12	5	2
Baltimore City Hospitals	Baltimore	E. L. Richards	442	100	No	$200	1	0	1/1	7/1	12	11	7
Johns Hopkins Hospital	Baltimore	A. Meyer	286	49	Yes	None	1	2	6/1	9/1	48	4	...
Spring Grove State Hospital	Catonsville, Md.	S. W. Weltmer	2,363	100	No	$132	1	0	Any time	Varies	12	149	23
Springfield State Hospital	Sykesville, Md.	L. A. Darling	3,314	100	No	$67	4	0	Any time	Varies	12	157	44
Sheppard and Enoch Pratt Hospital	Towson, Md.	R. M. Chapman	649	...	No	$100	3	0	Any time	Varies	12	12	7
McLean Hospital	Belmont, Mass.	K. J. Tillotson	440	...	Yes	$75	5	0	Any time	Varies	36	17	4
Boston Psychopathic Hospital	Boston	C. M. Campbell	2,089	85	Yes	$75	8	0	4/1	9/1	12	31	11
Boston State Hospital	Boston	H. F. Norton	3,490	88	No	....	3	0	Any time	Varies	36	291	296
Massachusetts General Hospital	Boston	S. Cobb	...	48	Yes	$42	2	0	Any time	9/1	12	....	....
Foxboro State Hospital	Foxboro, Mass.	C. F. Dewter	1,370	...	No	....	1	0	Any time	Varies	12	84	19
Gardner State Hospital	Gardner, Mass.	C. E. Thompson	1,530	97	Yes	$150	2	0	Any time	Varies	12	70	31
Medfield State Hospital	Medfield, Mass.	E. K. Holt	1,844	99	No	$150	1	0	Any time	Varies	12	109	48
Grafton State Hospital	North Grafton, Mass.	H. L. Paine	1,400	97	No	$150	2	0	Any time	Varies	12	74	19
Taunton State Hospital	Taunton, Mass.	R. M. Chambers	2,274	89	Yes	$150	4	0	Any time	7/1	12	212	101
Worcester State Hospital	Worcester, Mass.	W. A. Bryan	2,276	...	No	None	1	0	1/1	7/1	12	267	119
University Hospital	Ann Arbor, Mich.	R. W. Waggoner	261	95	Yes	$20	1	1	4/1	7/1	36	2	1
Eloise Hosp. for Mental Diseases	Eloise, Mich.	M. H. Hoffmann	4,104	100	Yes	$150	2	0	Any time	Varies	36	255	59
Pontiac State Hospital	Pontiac, Mich.	P. V. Wagley	1,795	...	Yes	$150	3	0	7/1	7/1	12	106	44
Traverse City State Hospital	Traverse City, Mich.	R. P. Sheets	1,400	97	Yes	$150	3	0	Any time	7/1	36	194	64
Ypsilanti State Hospital	Ypsilanti, Mich.	G. F. Inch	1,570	85	Yes	$50	2	0	Any time	Varies	36	91	42
Minneapolis General Hospital[1]	Minneapolis	J. Richel	1,500	100	Yes	$25	1	0	1/1	7/1	12	194	48
University Hospitals[1]	Minneapolis	J. C. McKinley	....	16	Yes	$30	1	1	1/1	7/1	36	....	....
State Hospital No. 1	Fulton, Mo.	R. Hanks	2,024	96	No	$75	3	0	Any time	Varies	36	239	45
State Hospital No. 2	St. Joseph, Mo.	O. Mullinax	2,688	97	Yes	$75	2	0	Any time	Varies	36	239	92
City Sanitarium	St. Louis	F. M. Grogan	4,339	81	Yes	$150	6	0	4/1	7/1	12	269	89
St. Louis City Hospital	St. Louis	....	1,500	100	Yes	$75	1	0	4/1	7/1	24	....	....
Hastings State Hospital	Ingleside, Neb.	J. C. Nielsen	1,789	85	Yes	$100	3	0	4/1&11/1	1/1&7/1	12	80	58
Norfolk State Hospital	Norfolk, Neb.	G. E. Charlton	1,656	90	No	$125	1	0	Any time	Varies	36	50	21
New Jersey State Hospital	Greystone Park	M. A. Curry	7,067	...	No	$160	10	0	Any time	Varies	36	551	112
Albany Hospital	Albany, N. Y.	L. H. Ziegler	828	69	Yes	$25	1	1	12/15	7/1	24	60	40
Binghamton State Hospital	Binghamton, N. Y.	W. C. Garvin	3,018	92	No	$150	3	0	Any time	Varies	36	206	98
Buffalo City Hospital[2]	Buffalo	E. A. Sharp and S. W. Hartwell	1,119	67	Yes	....	1	1	11/1	7/1	..	152	39
Buffalo State Hospital	Buffalo	J. A. Pritchard	2,443	87	Yes	$150	3	0	Any time	Varies	36	193	35
Hastings Hillside Hospital	Hastings-on-Hudson, N. Y.	L. Wender	137	14	Yes	$100	1	0	7/1	7/1	12	0	0
Gowanda State Homeopathic Hosp.	Helmuth, N. Y.	E. V. Gray	2,373	100	No	$150	4	0	Any time	Varies	36	135	69
Kings Park State Hospital	Kings Park, N. Y.	C. S. Parker	4,891	89	Yes	$150	4	0	Any time	Varies	36	225	78
Marcy State Hospital	Marcy, N. Y.	W. W. Wright	2,632	93	Yes	$150	3	0	Any time	Varies	36	223	62
Middletown State Homeopathic Hosp.	Middletown, N. Y.	R. C. Woodman	3,156	85	No	$150	1	0	Any time	Varies	36	176	86
Bellevue Hospital	New York City	K. M. Bowman	.....	100	Yes	$15	4	6	Any time	1/1&7/1	24	760	235
New York Hospital	New York City	O. Diefbelm	567	5	Yes	$50	2	6	1/1	7/1	60	6	4
N. Y. State Psychiatric Inst. and Hosp.	New York City	N. D. C. Lewis	386	85	Yes	$25	6	0	3/1	7/1	12	2	0
U. S. Marine Hospital	New York City	L. O. Weldon	1,025	100	Yes	$62	1	0	Any time	7/1	12	12	7
St. Lawrence State Hospital	Ogdensburg, N. Y.	P. G. Taddiken	2,637	95	Yes	$150	4	0	Any time	Varies	12	186	77
Hudson River State Hospital	Poughkeepsie, N. Y.	R. P. Folsom	3,132	89	No	$150	3	0	Any time	Varies	12	309	115
Rochester State Hospital	Rochester, N. Y.	J. L. Van De Mark	3,681	85	Yes	$150	6	0	Any time	Varies	12	219	36
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	E. K. Clarke	401	58	Yes	$75	1	0	1/1	7/1	12	....	....
Utica State Hospital	Utica, N. Y.	R. H. Hutchings	2,377	100	Yes	$150	1	0	Any time	Varies	12	153	52
Grasslands Hospital	Valhalla, N. Y.	T. P. Brennan	1,273	90	Yes	$117	2	0	4/1	7/1	12	30	20
New York Hospital, Westchester Div.	White Plains, N. Y.	C. G. Cheney	587	4	Yes	$125	6	0	Any time	7/1&10/1	12	9	2
Duke Hospital	Durham, N. C.	R. S. Crispell	....	64	Yes	$42	1	0	1/1	7/1	24	....	....
North Dakota State Hosp. for Insane	Jamestown, N. D.	.....	1,814	100	No	$80	2	0	Any time	Varies	12	155	40
Cincinnati General Hospital	Cincinnati	E. A. North	1,383	87	Yes	$	1	2	1/1&7/1	1/1&7/1	24	58	28
Longview State Hospital	Cincinnati	E. A. Baber	2,472	...	Yes	$62	1	0	Any time	Varies	36	218	80
City Hospital	Cleveland	W. Stone	847	97	Yes	$67	3	0	1/1	1/1&7/1	12	101	....
Cleveland State Hospital	Cleveland	G. H. Williams	3,174	...	...	$75	1	0	Any time	Varies	36	117	55
Toledo State Hospital	Toledo, O.	O. O. Fordyce	2,580	67	Yes	$60	1	0	4/1	7/1	12	214	41
Allentown State Hospital	Allentown, Pa.	H. I. Klopp	2,135	87	Yes	$125	4	0	Any time	Varies	36	113	25
Norristown State Hospital	Norristown, Pa.	A. P. Noyes	3,008	73	Yes	$125	4	0	Any time	Varies	36	320	58
Friends Hospital	Philadelphia	A. C. Buckley	239	4	No	$100	..	..	Any time	Varies	12	9	0
Institute of the Pennsylvania Hosp.	Philadelphia	E. D. Bond	884	0	Yes	$250	4	0	12/1	7/1	12	1	0
Pennsylvania Hosp. Department for Mental and Nervous Diseases	Philadelphia	E. D. Bond	433	4	Yes	$125	3	0	12/1	7/1	12	17	4
Philadelphia General Hospital	Philadelphia	.....	6,389	95	Yes	$100	1	0	7/1	7/1	12	....	....
St. Francis Hospital	Pittsburgh	....	2,121	14	Yes	$30	1	1	11/1	7/1	24	....	....
Warren State Hospital	Warren, Pa.	R. H. Israel	3,400	82	No	$125	3	0	Any time	Varies	36	168	45
State Hospital for Mental Diseases	Howard, R. I.	S. F. H. Howes	2,402	95	Yes	$150	3	0	Any time	Varies	36	197	64
Butler Hospital	Providence, R. I.	A. H. Ruggles	339	4	Yes	$50	2	0	Any time	Varies	12	27	6
Charles V. Chapin Hospital	Providence, R. I.	H. E. Kiene	638	72	Yes	$75	1	0	Any time	1/1	12	....	....
Galveston State Psychopathic Hosp.	Galveston, Tex.	G. W. Day	900	100	Yes	$100	5	0	1/1	7/1	12	4	1
John Sealy Hospital	Galveston, Tex.	T. H. Harris	501	60	Yes	None	1	0	12/1	7/15	12	26	14
University of Virginia Hospital	University	D. C. Wilson	304	96	Yes	$60	1	0	12/1	7/1	24	30	15
State of Wisconsin General Hospital	Madison, Wis.	W. F. Lorenz	....	88	Yes	$25	1	0	Any time	7/1	36	....	....
Milwaukee County Hospital for Mental Diseases	Wauwatosa, Wis.	A. F. Young	1,493	100	Yes	$50	2	0	1/1	7/1	12	47	14
Milwaukee Sanitarium	Wauwatosa, Wis.	R. Sleyster	236	3	No	$50	1	0	Any time	Varies	36	3	0
NEUROSURGERY													
University of California Hospital	San Francisco	H. W. Fleming and O. W. Jones	404	...	Yes	$25	1	0	2/1	7/1	12	17	11
Presbyterian Hospital	Chicago	A. Verbrugghen	292	24	Yes	None	1	0	Any time	7/1	24	13	6
Research and Educational Hospital	Chicago	E. Oldberg	188	100	Yes	$50	1	0	1/1	9/1	24	30	30
Boston City Hospital	Boston	D. Munro	764	94	Yes	None	1	11	Any time	7/1&9/1	36	2	1
Massachusetts General Hospital	Boston	W. J. Mixter	....	48	Yes	$42	1	0	Any time	7/1	12	....	....
Henry Ford Hospital	Detroit	A. S. Crawford	.....	...	Yes	$125	1	0	1/1	9/1	36	23	11
Kings County Hospital	Brooklyn	E. J. Browder	.....	100	Yes	$100	1	0	1/1	7/1	12	186	95
Neurological Institute of New York	New York City	C. A. Elsberg	503	9	No	$40	1	2	Any time	Varies	36	....	....
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	W. P. Van Wagenen	280	58	Yes	$75	1	0	1/1	7/1	12	....	....
Temple University Hospital[1]	Philadelphia	T. S. Fay	391	43	Yes	$50	1	0	1/1	7/1	36	34	24
Medical College of Va., Hosp. Division	Richmond	C. C. Coleman	1,219	30	Yes	$50	1	1	2/1	7/1	24	125	63

Numerical and other references will be found on page 707.

109
37

			Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Apply Before	Service Begins	Available Training (Months)	Deaths	Autopsies
OBSTETRICS													
(Also see Obstetrics-Gynecology)		**Chief of Service**											
Los Angeles County Hospital	Los Angeles	L. G. McNeile	5,007	100	Yes	$10	5	0	6/1	8/2/1	1/1	56	50
Hospital for Children	San Francisco	H. A. Stephenson	846	10	Yes	$25	1	0	1/1	7/1	12	...	...
Garfield Memorial Hospital	Washington, D. C.	A. Y. P. Garnett	825	17	Yes	$50	1	0	12/1	7/1	12	...	...
Chicago Maternity Center [10]	Chicago	J. B. DeLee	5,576	100	Yes	None	1	0	10/1	1/1	12	95	18
Cook County Hospital	Chicago	D. S. Hillis	7,607	100	Yes	None	2	2	1/1	8/7/1	1/1	8/7/1	12	51	23
Provident Hospital (col.)	Chicago	P. M. Santos	348	11	Yes	$50	1	0	1/1	9/1	12	3	2
Research and Educational Hospital	Chicago	F. H. Falls	807	100	Yes	$50	1	1	1/1	8/7/1	1/1	8/7/1	24	31	30
Indiana University Hospitals	Indianapolis	H. F. Beckman	1,089	83	Yes	$33	1	0	2/1	7/1	12	11	2
Louisville City Hospital	Louisville, Ky.	A. S. Pickett	1,205	90	Yes	$14	1	2	3/1	7/1	36	9	4
Touro Infirmary	New Orleans	W. E. Levy	1,857	32	Yes	$25	4	0	1/1	7/1	12	...	...
Johns Hopkins Hospital	Baltimore	N. J. Eastman	1,680	49	Yes	None	1	3	6/1	9/1	36	11	...
Provident Hosp. and Free Disp. (col.)	Baltimore	L. H. Douglass	176	79	Yes	$25	1	0	5/1	10/15	36	...	...
Sinai Hospital	Baltimore	M. W. Aaronson	799	58	Yes	$17	1	0	1/1	7/1	12	3	2
University Hospital	Baltimore	J. M. H. Rowland	1,083	47	Yes	None	1	2	12/1	7/1	24	11	10
Boston Lying-in Hospital	Boston	F. C. Irving	3,223	9	Yes	None	1	1	5/1	8/11/1	1/1	8/7/1	18	9	4
Massachusetts Memorial Hospitals	Boston	E. W. Smith	684	26	Yes	$91	1	0	1/1	7/1	12	29	28
Providence Hospital	Detroit		2,305	12	No	$100	1	0	12/1	7/1	12	5	...
St. Louis Maternity Hospital	St. Louis	O. H. Schwarz	2,730	13	Yes	None	0	7	12/1	7/1	12	26	14
Margaret Hague Maternity Hospital	Jersey City, N. J.	S. A. Cosgrove	6,056	54	Yes	$100	1	6	Quart.	Quart.	24	146	95
Cumberland Hospital	Brooklyn	W. C. Meagher	1,157	100	Yes	$100	1	0	3/1	7/1	12	5	3
Jewish Hospital	Brooklyn	J. Ronsheim	2,539	32	Yes	$50	1	0	12/1	7/1	18	2	0
Methodist Episcopal Hospital	Brooklyn	O. P. Humpstone	1,843	36	Yes	$60	1	0	11/1	7/1	12	...	...
Norwegian Lutheran Deaconesses' Home and Hospital	Brooklyn		924	12	Yes	None	1	0	1/1	7/1	12	4	3
Buffalo City Hospital [2]	Buffalo	F. C. Goldsborough	746	67	Yes	...	1	1	11/1	7/1	...	7	2
Buffalo General Hospital	Buffalo	F. C. Goldsborough	717	10	Yes	$25	1	0	11/1	7/1	12	4	2
Millard Fillmore Hospital	Buffalo		1,189	22	Yes	$25	1	0	11/1	7/1	12	11	3
Lenox Hill Hospital	New York City	F. H. Williams and R. L. McCready	948	21	Yes	$50	1	0	1/1	7/1	12	12	6
Lincoln Hospital	New York City	E. J. Davin	1,450	97	Yes	None	1	0	1/1	7/1	12	6	4
Morrisania City Hospital	New York City	H. Aranow	1,466	100	Yes	$15	2	0	1/1	8/7/1	1/1	8/7/1	12	48	21
N. Y. Polyclinic Med. School and Hosp.	New York City	E. M. Hawks	679	15	Yes	$128	1	0	1/1	7/1	12	1	1
Syracuse Memorial Hospital	Syracuse, N. Y.	H. W. Schoeneck	1,287	45	Yes	None	1	0	1/1	7/1	12	3	1
Cincinnati General Hospital	Cincinnati	H. L. Woodward	2,491	87	Yes	*	1	2	2/15	7/1	24	8	3
City Hospital	Cleveland	A. H. Bill	1,595	97	Yes	$50	1	3	1/1	7/1	24	7	...
Mount Sinai Hospital	Cleveland	M. Garber	711	25	No	$60	1	0	12/1	7/1	12	2	2
St. Ann's Maternity Hospital	Cleveland		1,953	9	Yes	$100	2	0	6/1	7/1	12	18	15
St. John's Hospital	Cleveland	C. A. O'Connell	754	18	No	$25	1	0	12/1	7/1	12	3	1
St. Luke's Hospital	Cleveland	A. J. Skeel	1,435	18	Yes	$25	1	1	12/1	7/1	24	2	1
University Hospitals	Cleveland	A. H. Bill	2,061	30	Yes	$35	1	4	1/1	7/1	36	8	...
Miami Valley Hospital	Dayton, O.	G. L. Erbaugh	1,029	28	No	$75	1	0	12/1	7/1	12	...	...
State University and Crippled Children's Hospitals	Oklahoma City	W. W. Wells	570	67	Yes	$50	1	0	1/1	7/1	12	6	4
Hospital of the Univ. of Pennsylvania	Philadelphia	C. C. Norris	1,367	51	Yes	None	1	0	1/1	9/1	12	5	4
Elizabeth Steele Magee Hospital	Pittsburgh	C. E. Ziegler	2,915	40	Yes	$42	3	0	1/1	8/1	12	24	10
John Gaston Hospital	Memphis, Tenn.	W. T. Pride	2,000	95	Yes	$32	1	0	1/1	7/1	12	42	5
Baylor University Hospital	Dallas, Tex.	C. R. Hannah	995	20	Yes	$125	1	0	4/1	7/1	12	7	3
Medical College of Va., Hosp. Division	Richmond	H. H. Ware, Jr.	1,032	30	Yes	$30	1	0	2/1	7/1	12	18	9
OBSTETRICS-GYNECOLOGY													
(Also see Obstetrics and Gynecology)													
Hillman Hospital	Birmingham, Ala.		2,800	100	Yes	$40	2	0	1/15	7/1	12	57	16
White Memorial Hospital	Los Angeles	R. J. Thompson	1,150	2	Yes	$80	2	0	3/1	7/1	36	2	0
Alameda County Hospital	Oakland, Calif.	E. N. Ewer and C. A. DePuy	1,615	100	No	$40	0	3	2/1	7/1	12	...	...
San Francisco Hospital	San Francisco	W. G. Moore and A. V. Pettit	2,423	100	Yes	$25	1	2	2/1	7/1	24	81	...
Stanford University Hospitals	San Francisco	L. A. Emge	1,553	4	Yes	$25	1	2	1/1	7/1	36	7	3
University of California Hospital	San Francisco	F. W. Lynch	1,110	...	Yes	$25	1	3	2/15	7/1	36	8	3
Santa Clara County Hospital	San Jose, Calif.	A. A. Shufelt	1,034	100	Yes	$100	1	0	1/1	7/1	12	...	...
New Haven Hospital	New Haven, Conn.	A. H. Morse	1,361	43	Yes	....	1	2	12/15	7/1	12	16	9
Columbia Hospital for Women and Lying-In Asylum	Washington, D. C.		3,694	...	Yes	None	2	4	5/1	2&11/1	1/1	8/7/1	18	62	24
Freedmen's Hospital (col.)	Washington, D. C.	J. W. Ross	1,462	80	Yes	$62	1	0	3/1	7/1	12	63	18
Gallinger Municipal Hospital	Washington, D. C.	H. F. Kane	5,037	100	No	$30	3	0	1/1	7/1	12	145	94
Grady Hospital	Atlanta, Ga.	J. R. McCord	4,825	100	Yes	$60	2	0	1/1	7/1	12	50	13
University Hospital	Augusta, Ga.	R. Torpin	1,961	50	Yes	$50	2	0	11/1	7/1	12	74	24
Chicago Lying-in Hospital and Disp.	Chicago	F. L. Adair	3,258	25	Yes	None	1	6	1/1	8/7/1	1/1	8/7/1	36	54	43
Presbyterian Hospital	Chicago	N. S. Heaney	1,658	24	Yes	$75	1	0	Any time		7/1	24	3	3
St. Luke's Hospital	Chicago		1,090	6	Yes	None	2	0	1/1	7/1	12	38	9
University of Chicago Clinics (see Chicago Lying-In Hospital and Disp.)	Chicago												
University Hospitals	Iowa City	E. D. Plass	4,061	87	Yes	$30	1	5	1/1	7/1	36	25	17
University of Kansas Hospitals	Kansas City, Kan.	L. A. Calkins	1,879	51	Yes	$45	1	2	12/1	7/1	36	8	6
Charity Hospital	New Orleans		16,873	100	Yes	$25	2	0	7/1	7/1	12	...	...
Mercy Hospital	Baltimore	F. F. Smith and W. S. Gardner	1,221	51	Yes	$35	1	0	1/1	7/1	12	7	9
St. Joseph's Hospital	Baltimore		1,952	42	Yes	None	1	1	12/1	7/1	24	6	2
Boston City Hospital	Boston		5,610	94	Yes	None	2	6	Any time	Quart.	24	46	12
University Hospital	Ann Arbor, Mich.	N. F. Miller	2,698	79	Yes	$25	2	0	12/1	7/1	12	60	43
City of Detroit Receiving Hospital [13]	Detroit	W. F. Seeley	1,425	100	Yes	$83	2	2	3/1	7/15	48	...	...
Grace Hospital	Detroit	H. Anderson and M. A. Darling	2,674	31	Yes	$50	1	0	4/1	9/1	12	8	2
Harper Hospital	Detroit	G. A. Kamperman	1,334	11	Yes	$25	1	2	2/1	7/1	36	...	...
Henry Ford Hospital	Detroit	J. F. Pratt	.....	...	Yes	$110	1	1	1/1	9/1	24	41	17
Kiernan Kiefer Hospital [13]	Detroit	F. Seeley	3,643	97	No	$125	1	1	1/1	7/1	48	77	24
Woman's Hospital	Detroit	L. E. Daniels and C. H. Judd	5,602	8	Yes	$25	1	8	2/1	7/1	36	18	9
Minneapolis General Hospital [1]	Minneapolis	J. A. Urner	2,577	100	Yes	$25	1	1	1/1	8/7/1	1/1	8/7/1	36	24	10
University Hospitals [1]	Minneapolis	A. C. Strandberg	2,726	16	Yes	$40	1	1	1/1	7/1	36	13	9
Ancker Hospital [1]	St. Paul	L. W. Barry	2,642	98	Yes	$25	1	0	5/1	7/1	36	18	9
Jewish Hospital	St. Louis	S. A. Weintraub	953	51	No	$63	1	0	12/1	7/1	12	8	5
St. Louis City Hospital	St. Louis		3,529	100	Yes	$75	1	2	12/1	7/1	24	...	...
St. Louis Maternity Hospital	St. Louis	O. H. Schwarz	2,730	13	Yes	$25	2	0	1/1	7/1	36	26	14
St. Luke's Hospital	St. Louis	C. D. O'Keefe	895	14	Yes	$50	1	0	12/1	7/1	12	...	...
St. Mary's Group of Hospitals	St. Louis	W. H. Vogt	1,737	50	Yes	$25	1	4	3/1	7/1	24	23	15
University of Nebraska Hospital	Omaha	E. C. Sage	866	95	Yes	$60	1	0	12/1	7/1	12	...	...
Kings County Hospital	Brooklyn	C. Duncan	6,490	100	Yes	None	2	2	6/1	11/1	1/1	8/7/1	24	82	19
Long Island College Hospital	Brooklyn	A. C. Beck	2,348	30	Yes	$27	1	2	1/1	7/1	24	18	9

Numerical and other references will be found on page 707.

V 10
1937

			Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Apply Before	Service Begins	Available Training (Months)	Deaths	Autopsies
OBSTETRICS-GYNECOLOGY—Continued		**Chief of Service**											
Buffalo City Hospital [2]	Buffalo	F. C. Goldsborough	1,345	67	Yes	...	1	1	11/1	7/1	...	21	2
Queens General Hospital	Jamaica, N. Y.	H. P. Mencken	2,358	100	Yes	$15	1	1	1/1	7/1	24	17	13
Bellevue Hospital	New York City	W. E. Studdiford, Jr.	5,525	100	Yes	...	1	10	Any time	7/1	48	...	...
Lying-In Hospital (Unit of New York Hospital)	New York City	H. J. Stander	4,456	5	Yes	None	1	10	1/1	7/1	60	14	7
Metropolitan Hospital	New York City	H. B. Safford	2,023	100	Yes	$100	2	0	3/1	7/1	12	72	29
Sloane Hospital for Women	New York City	B. P. Watson	3,775	90	Yes	None	1	8	Any time	7/1	48	27	8
Woman's Hospital	New York City	G. G. Ward	3,406	9	Yes	None	1	8	Any time	Quart.	24	70	35
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	K. M. Wilson	2,178	58	Yes	$42	1	2	1/1	7/1	36	25	14
Duke Hospital	Durham, N. C.	F. B. Carter	1,900	64	Yes	$42	1	6	1/1	7/1	72	76	56
Huron Road Hospital	East Cleveland, O.	S. C. Runnels	782	13	Yes	$50	1	0	1/1	7/1	12	...	10
Univ. of Oregon Med. School Hosps.	Portland	R. E. Watkins	2,083	100	Yes	$30	1	2	1/1	7/1	36	28	17
Kensington Hospital for Women	Philadelphia	E. A. Schumann and W. E. Parke	2,753	25	Yes	$25	1	1	7/1	7/1	24	55	41
Pennsylvania Hospital	Philadelphia	N. W. Vaux	3,712	51	Yes	None	2	0	Any time	1/1&7/1	12	14	7
Philadelphia General Hospital	Philadelphia		5,650	95	Yes	$100	1	0	7/1	7/1	12	...	...
St. Francis Hospital	Pittsburgh		629	14	Yes	$50	1	0	11/1	7/1	12	...	...
Roper Hospital	Charleston, S. C.	A. J. Buist, Sr.	1,322	78	Yes	$40	1	0	1/1	7/1	12	20	11
Nashville General Hospital	Nashville, Tenn.		1,688	90	Yes	$35	1	1	12/1	7/1	24	22	6
Vanderbilt University Hospital	Nashville, Tenn.	L. E. Burch	655	32	Yes	$35	1	2	3/15	7/1	24	8	3
John Sealy Hospital	Galveston, Tex.	W. R. Cooke	1,199	60	Yes	None	1	0	12/1	7/15	12	8	3
University of Virginia Hospital	University	T. J. Williams	1,068	98	Yes	None	1	1	12/1	7/1	24	11	4
State of Wisconsin General Hospital	Madison	J. W. Harris	...	88	Yes	$25	1	2	Any time	7/1	36	...	...
Milwaukee County General Hospital	Wauwatosa, Wis.	E. H. Gramling	2,466	100	Yes	$100	1	0	5/1	7/16	12	75	18
OPHTHALMOLOGY (Also see Ophthalmology-Otolaryngology)													
Los Angeles County Hospital	Los Angeles	G. H. Kress	640	100	Yes	$10	1	1	6/1&12/1	1/1&7/1	24	2	2
Stanford University Hospitals	San Francisco	H. Barkan	551	4	Yes	$25	1	1	1/1	7/1	24	0	0
University of California Hospitals	San Francisco	F. C. Cordes	200	...	Yes	$25	0	2	2/15	7/1	24	0	0
Episcopal Eye, Ear and Throat Hosp.	Washington, D. C.	J. B. Griffith	.....	23	Yes	None	1	3	Quart.	3/1,7/1,11/1	16	2	1
Cook County Hospital	Chicago	W. F. Monoreiff	.....	100	Yes	None	1	1	1/1&7/1	1/1&7/1	18	...	...
Illinois Eye and Ear Infirmary	Chicago	H. S. Gradle	.....	100	Yes	None	6	6	4/1&11/1	1/1&7/1	24	...	...
Michael Reese Hospital	Chicago	H. S. Gradle	647	44	Yes	None	1	0	1/1&7/1	1/1&7/1	12	...	...
Passavant Memorial Hospital	Chicago	S. R. Gifford	264	10	Yes	None	1	0	1/1	7/1	12	1	1
Presbyterian Hospital	Chicago	W. F. Monoreiff	192	24	Yes	None	1	1	Any time	1/1&7/1	12	...	...
Research and Educational Hospital	Chicago	H. Benedict	244	100	Yes	$50	1	0	1/1	7/1	12	0	0
University of Chicago Clinics	Chicago	E. V. L. Brown	231	17	Yes	$25	1	3	1/1	7/1	24	0	0
Indianapolis City Hospital	Indianapolis	B. J. Larkin	195	90	Yes	$30	1	0	4/1	7/1	12	0	0
Indiana University Hospitals	Indianapolis	W. F. Hughes	303	83	Yes	$33	1	0	2/1	7/1	12	2	0
University Hospitals	Iowa City	C. S. O'Brien	1,173	87	Yes	$30	2	2	1/1	7/1	48	2	0
Eye, Ear, Nose and Throat Hospital	New Orleans	W. R. Buffington	3,536	15	Yes	None	3	0	Any time	7/1	24	...	...
Johns Hopkins Hospital	Baltimore	A. C. Woods	1,193	49	Yes	None	1	4	6/1	9/1	60	3	2
Massachusetts Eye and Ear Infirmary	Boston	J. H. Waite	2,305	46	Yes	None	1	6	1/1&6/1	Quart.	21	3	2
University Hospital	Ann Arbor, Mich.	F. B. Fralick	1,062	79	Yes	$25	1	2	12/1	7/1	36	1	0
Henry Ford Hospital [1]	Detroit	E. L. Whitney	.....	...	Yes	$110	1	1	1/1	7/1	24	...	...
University Hospitals [1]	Minneapolis	F. E. Burch	239	16	Yes	$50	1	1	1/1	7/1	36	...	...
Barnes Hospital	St. Louis	L. T. Post	542	17	Yes	$27	1	1	12/1	7/1	36	...	...
St. Louis City Hospital	St. Louis		181	100	Yes	$100	1	0	12/1	7/1	12	...	...
St. Mary's Group of Hospitals [1]	St. Louis	W. H. Luedke	128	49	Yes	$25	1	1	3/15	7/1	24	2	0
Brooklyn Eye and Ear Hospital	Brooklyn	Arnold Knapp	.....	5	Yes	None	6	0	5/1&11/1	7/1&10/1	18	4	1
Kings County Hospital	Brooklyn	W. Mochle	222	100	Yes	$100	0	0	6/1	1/1	12	3	0
Long Island College Hospital	Brooklyn	J. N. Evans	.....	30	Yes	$22	1	1	1/1&7/1	1/1&7/1	12	...	...
Buffalo City Hospital [2]	Buffalo	H. M. Weed	191	67	Yes	...	1	1	11/1	7/1	12	5	0
Bellevue Hospital	New York City	W. W. Weeks	661	100	Yes	...	1	4	Any time	1/1,5/1,9/1	36	...	...
Herman Knapp Memorial Eye Hosp.	New York City	Arnold Knapp	741	14	Yes	None	1	1	1/1&6/1	1/1&6/1	18	0	0
Manhattan Eye, Ear and Throat Hosp.	New York City	D. H. Webster	1,586	...	Yes	None	1	6	Any time	1/1,5/1,9/1	24	3	0
Metropolitan Hospital	New York City	A. L. Chambers	111	100	Yes	None	1	0	3/1	7/1	12	1	1
Mount Sinai Hospital	New York City	K. Schilwek and I. Goldstein	.....	56	Yes	$30	1	0	1/1	7/1	12	...	...
New York Eye and Ear Infirmary	New York City	F. W. Shine	2,940	38	Yes	None	1	6	2/1&9/1	Quart.	21	4	0
Presbyterian Hospital	New York City	J. M. Wheeler	1,670	30	Yes	$125	1	5	Any time	1/1&7/1	36	4	1
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	J. F. Gilpner	216	58	Yes	$42	1	1	1/1	7/1	24	...	...
Grasslands Hospital	Valhalla, N. Y.		77	80	Yes	$75	1	0	4/1	7/1	24	0	0
Cincinnati General Hospital	Cincinnati		378	87	Yes	*	1	1	2/15	7/1	24	2	1
City Hospital	Cleveland	W. E. Bruner	160	97	Yes	$37	1	0	1/1	7/1	12	1	...
University Hospitals	Cleveland	A. B. Bruner	391	30	Yes	$35	1	1	1/1	7/1	24	...	...
Univ. of Oregon Med. School Hosps.	Portland	F. A. Kiehle	236	100	Yes	$30	1	0	1/1	7/1	12	1	1
Graduate Hosp. of the Univ. of Pa.	Philadelphia	W. E. Shoemaker	336	36	Yes	None	1	0	1/1	7/1	12	1	...
Temple University Hospital	Philadelphia	W. I. Lillie	155	43	Yes	$50	1	1	1/1	7/1	36	1	1
Wills Hospital	Philadelphia	F. C. Parker	2,693	68	Yes	None	1	6	Quart.	Quart.	21	9	0
OPHTHALMOLOGY-OTOLARYNGOLOGY (Also see Ophthalmology and Otolaryngology)													
White Memorial Hospital	Los Angeles	W. A. Boyer and B. N. Colver	447	2	Yes	$80	2	0	3/1	7/1	24	6	3
San Diego County General Hospital	San Diego, Calif.	H. J. Stewart	856	100	Yes	$75	1	0	4/1	7/1	12	...	...
Hospital for Children	San Francisco	R. C. Martin	1,129	10	Yes	$25	1	0	1/1	7/1	12	...	...
Gallinger Municipal Hospital	Washington, D. C.		567	100	No	$50	1	0	1/1	7/1	12	...	...
Grady Hospital	Atlanta, Ga.	A. G. Fort	2,045	100	Yes	$50	2	0	1/1	7/1	12	6	1
Charity Hospital	New Orleans		2,804	100	Yes	$37	1	1	7/1	7/1	24	7	0
Touro Infirmary	New Orleans	H. N. Blum and A. I. Weil	1,612	32	Yes	$25	1	0	1/1	7/1	12	24	14
Baltimore Eye, Ear and Throat Charity Hospital	Baltimore	H. K. Fleck	2,311	50	Yes	None	3	0	1/1	7/1	24	...	...
University Hospital	Baltimore		1,028	47	Yes	None	1	0	12/1	7/1	24	4	1
Boston City Hospital	Boston	J. J. Regan and L. M. Friedman	5,484	94	Yes	None	2	5	Any time	Quart.	21	24	5
City of Detroit Receiving Hospital	Detroit	J. M. Robb	1,161	100	Yes	$83	1	0	3/1	7/15	12	...	...
Grace Hospital	Detroit	C. C. McClelland	1,501	31	Yes	$50	1	0	4/1	9/1	12	...	...
Harper Hospital	Detroit	J. M. Robb	2,976	11	Yes	$25	1	2	2/1	7/1	36	...	...
Eloise Hospital (Dr. Wm. J. Seymour Hospital)	Eloise, Mich.	R. Beattie and F. L. Ryerson	3,158	100	Yes	$37	1	1	3/1	7/1	24	6	3

Numerical and other references will be found on page 707.

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Apply Before	Service Begins	Available Training (Months)	Deaths	Autopsies
OPHTHALMOLOGY-OTOLARYNGOLOGY—(Continued)													
Minneapolis General Hospital [1]	Minneapolis		692	100	Yes	$25	1	1	1/1&7/1	1/1&7/1	36	5	3
Ancker Hospital	St. Paul	R. G. Leavenworth	1,421	98	Yes	$30	1	1	3/1	7/1	24	2	1
Jersey City Hospital	Jersey City, N. J.	M. G. Borrone	3,421	90	Yes	$75	3	0	3/1&7/1	1/1&10/1	12	13	1
Newark Eye and Ear Infirmary	Newark, N. J.	W. P. Eagleton	2,568	17	Yes	None	1	2	Any time	Varies	12	20	16
Queens General Hospital	Jamaica, N. Y.	W. G. Frey, Jr. and M. S. Bender	1,069	100	Yes	$15	1	1	1/1	7/1	24	16	8
N.Y. Polyclinic Med. School and Hosp.	New York City		1,870	16	Yes	None	2	2	1/1&7/1	1/1&7/1	24	5	1
N.Y. Post-Grad. Med. School and Hosp.	New York City	M. Cohen and D. MacPherson	2,892	30	Yes	None	1	5	12/1	5/1&11/1	36	16	4
St. Luke's Hospital	New York City		2,655	48	Yes	None	1	2	Any time	3/1&9/1	18	...	...
Duke Hospital	Durham, N. C.	W. W. Eagle and W. B. Anderson	1,085	64	Yes	$42	1	2	1/1	7/1	36	8	5
State University and Crippled Children's Hospitals	Oklahoma City	E. S. Ferguson	591	67	Yes	$30	1	0	1/1	7/1	12	8	7
Eye and Ear Hospital	Pittsburgh	W. E. Carson and J. H. McCready	5,625	12	Yes	None	1	2	1/1	7/1	24	17	8
Memphis Eye, Ear, Nose and Throat Hospital	Memphis, Tenn.	L. Levy	1,804	10	Yes	None	1	3	3/1&10/1	1/1&7/1	24	5	7
Medical College of Va., Hosp. Division	Richmond	E. Hill and K. S. Blackwell	1,412	20	Yes	$50	1	1	2/1	7/1	12	10	1
University of Virginia Hospital	University	F. D. Woodward	1,051	26	Yes	$25	1	1	12/1	7/1	24	13	1
State of Wisconsin General Hospital	Madison	F. A. Davis and W. M. Nesbit	.....	88	Yes	$25	1	2	Any time	7/1	36	...	...
Milwaukee County General Hospital	Wauwatosa, Wis.	S. G. Higgins	321	100	Yes	$100	1	0	5/1	7/16	12	...	3
ORTHOPEDICS													
Children's Hospital	Los Angeles	J. C. Wilson	346	52	Yes	$50	1	0	3/1	7/1	12	2	1
Los Angeles County Hospital	Los Angeles		5,161	100	Yes	$10	1	4	6/1&12/1	1/1&7/1	24	173	140
Orthopaedic Hospital	Los Angeles	C. L. Lowman	1,950	57	Yes	$50	1	4	6/1	6/1	24	4	2
San Francisco Hospital [1]	San Francisco	F. C. Bost	1,100	100	No	...	1	0	Any time	Varies	12	...	...
Shriners Hospital	San Francisco	S. L. Haas	344	100	Yes	$25	1	0	1/1	6/1	24	0	0
University of California Hospital	San Francisco	L. C. Abbott	237	..	Yes	$50	2	0	2/15	7/1	12	5	2
Children's Hospital	Denver	H. W. Wilcox	504	18	No	$50	1	0	12/1	7/1	24	3	2
New Haven Hospital	New Haven, Conn.	A. L. Bassin	....	43	Yes	...	1	1	12/15	7/1	12	11	...
Cook County Hospital	Chicago	P. Lewin	767	100	Yes	None	1	1	1/1&7/1	1/1&7/1	12	32	6*
Research and Educational Hospital	Chicago	H. B. Thomas	392	100	Yes	$50	1	1	1/1	7/1	36	5	4
University of Chicago Clinics	Chicago	E. L. Compere	676	17	Yes	$25	1	3	1/1	7/1	36	7	7
Indiana University Hospitals	Indianapolis	L. A. Ensminger	1,057	81	Yes	$83	2	0	2/1	7/1	12	10	5
University Hospitals	Iowa City	A. Steindler	3,312	Yes	Yes	$30	2	6	1/1	7/1	36	7	6
Charity Hospital	New Orleans		1,294	100	Yes	$12	1	0	7/1	7/1	24	7	7
Shriners Hosp. for Crippled Children	Shreveport, La.	H. A. Durham	363	100	Yes	$125	1	0	Any time	Varies	12	0	0
James Lawrence Kernan Hospital	Baltimore	A. F. Voshell	252	96	Yes	$80	1	0	1/1	7/1	12	3	0
Johns Hopkins Hospital	Baltimore	G. E. Bennett	428	40	Yes	None	1	2	6/1	9/1	36	...	...
Boston City Hospital	Boston	O. J. Hermann	1,461	94	Yes	$83	2	0	Any time	1/1&9/1	12	12	0
Children's Hospital	Boston	F. R. Ober	348	2	Yes	...	1	0	Any time	Varies	12	1	1
Massachusetts General Hospital	Boston	M. N. Smith-Petersen	523	48	Yes	$42	1	1	Any time	7/1	24	...	...
Shriners Hosp. for Crippled Children	Springfield, Mass.	R. N. Hatt	467	100	Yes	$25	1	0	7/1	8/1	12	0	0
Henry Ford Hospital	Detroit	C. L. Mitchell	.....	..	Yes	$130	1	2	1/1	9/1	36	7	2
Gillette State Hospital for Crippled Children	St. Paul	C. C. Chatterton	333	100	Yes	$160	1	0	3/1	7/1	12	19	19
State Hospital for Crippled Children (Unit of University Hospitals)	Columbia, Mo.	W. J. Stewart	606	..	Yes	None	1	0	Any time	9/1	12	4	2
Shriners Hosp. for Crippled Children	St. Louis	C. H. Crego, Jr	439	100	Yes	$135	1	0	1/1	7/1	12	2	1
Jersey City Hospital	Jersey City, N. J.	S. B. Sprague and W. G. Doran	1,661	90	Yes	$50	2	0	7/1&9/1	1/1&3/1	12	43	...
New Jersey Orthopaedic Hospital and Dispensary	Orange, N. J.	H. W. Smith	350	20	Yes	$50	1	1	1/1&7/1	1/1&7/1	12	2	0
Kings County Hospital	Brooklyn	J. B. L'Episcopo	1,224	100	Yes	None	1	1	7/1	1/1	24	37	15
Long Island College Hospital	Brooklyn	J. C. Rushmore	404	20	Yes	$45	1	0	1/1	7/1	12	4	1
Bellevue Hospital	New York City	A. Krida	115	100	Yes	...	1	1	Any time	1/1&7/1	18	...	...
Hospital for Joint Diseases	New York City		2,871	94	Yes	$25	1	7	Any time	1/1	36	19	4
Metropolitan Hospital	New York City	J. E. Bingham	603	100	Yes	$75	1	0	5/1	7/1	12	37	1
N.Y. Orthopaedic Disp. and Hospital	New York City	B. P. Farrell	1,887	74	Yes	$50	8	0	Any time	Quart.	24	2	1
N.Y. Post-Grad. Med. School and Hosp.	New York City	C. Ogilvy	730	30	Yes	$60	1	0	1/1	7/1	12	10	0
New York Society for the Relief of the Ruptured and Crippled	New York City	P. D. Wilson	1,356	33	Yes	$30	4	4	1/1&7/7	1/1&7/1	24	...	...
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	R. P. Schwartz	508	58	Yes	$42	1	1	1/1	7/1	24	...	...
Sea View Hospital	Staten Island, N. Y.	R. S. Dillehunt	785	100	Yes	$100	2	0	5/1&11/1	1/1&7/1	12	36	11
New York State Reconstruction Home	West Haverstraw	C. Wallace	477	100	Yes	$100	1	2	1/1&7/1	1/1&7/1	18	4	0
Duke Hospital	Durham, N. C.	A. R. Shands, Jr.	606	64	Yes	$42	1	1	1/1	7/1	48	9	3
Cincinnati General Hospital	Cincinnati	A. H. Freiberg	475	87	Yes	...	1	1	2/15	7/1	24	8	3
Mount Sinai Hospital [12]	Cleveland	W. G. Stern	813	23	No	$60	1	0	12/1	7/1	12	...	...
University Hospitals	Cleveland	M. Harbin	930	30	Yes	$35	1	0	1/1	7/1	12	8	...
State University and Crippled Children's Hospitals	Oklahoma City		1,162	67	Yes	$50	1	2	1/1	7/1	36	15	4
Shriners Hosp. for Crippled Children	Portland, Ore.	R. B. Dillehunt	256	100	Yes	$75	1	0	3/1	7/1	12	0	0
State Hospital for Crippled Children	Elizabethtown, Pa.	J. S. Donaldson	195	100	Yes	$100	1	1	4/1	7/1	24	2	1
Philadelphia Orthopaedic Hospital and Infirmary for Nervous Diseases	Philadelphia	D. P. Willard	255	37	Yes	$40	1	0	Any time	7/1	12	1	0
Willis C. Campbell Clinic [1]	Memphis, Tenn.	W. C. Campbell	866	0	Yes	$50	4	0	Any time	1/1&7/1	24	11	0
Texas Scottish Rite Hospital for Crippled Children	Dallas	W. B. Carrell	816	100	Yes	$100	1	0	1/1	7/1	12	0	0
University of Virginia Hospital	University	R. V. Funsten	470	26	Yes	$30	1	1	12/1	7/1	12	10	4
State of Wisconsin General Hospital	Madison	R. E. Burns	.....	88	Yes	$25	1	4	Any time	7/1	36	...	...
Milwaukee County General Hospital	Wauwatosa, Wis.	C. C. Schneider	317	100	Yes	$100	1	0	5/1	7/16	12	29	6
OTOLARYNGOLOGY (Also see Ophthalmology and Otolaryngology)													
Children's Hospital	Los Angeles	J. M. Brown	1,466	52	Yes	$50	1	0	3/1	7/1	12	4	3
Los Angeles County Hospital	Los Angeles	F. E. Detling	5,212	100	Yes	$10	1	2	6/1&12/1	1/1&7/1	24	37	28
San Francisco Hospital	San Francisco	R. C. Martin and H. B. Graham	1,787	100	Yes	$25	2	0	2/1	7/1	12	12	...
Stanford University Hospitals	San Francisco	F. C. Sewall	1,447	4	Yes	$25	1	2	1/1	7/1	36	8	5
University of California Hospital	San Francisco	W. B. Smith	719	..	Yes	$25	0	1	2/15	7/1	12	2	2
New Haven Hospital	New Haven, Conn.	N. Canfield	1,146	43	Yes	...	1	1	12/15	7/1	..	11	...
Episcopal Eye, Ear and Throat Hosp.	Washington, D. C.		.....	25	Yes	None	3	0	Quart.	3/1,7/1,11/1	12	18	4
Cook County Hospital	Chicago	T. C. Galloway	.....	100	Yes	None	1	1	1/1&7/1	1/1&7/1	12	...	...
Illinois Eye and Ear Infirmary	Chicago	H. S. Gradle	.....	100	Yes	None	3	6	4/1&11/1	1/1&7/1	24	...	...
Passavant Memorial Hospital	Chicago	J. G. Wilson	258	10	Yes	None	1	0	1/1	7/1	12	1	1
Presbyterian Hospital	Chicago	G. E. Shambaugh	1,792	24	Yes	None	1	1	Any time	1/1&7/1	12	5	3

Numerical and other references will be found on page 707.

V 10
193

			Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Apply Before	Service Begins	Available Training (Months)	Deaths	Autopsies
OTOLARYNGOLOGY (Continued)													
(Also see Ophthalmology-Otolaryngology)		Chief of Service											
Research and Educational Hospital	Chicago	F. L. Lederer	936	100	Yes	$50	1	0	1/1	7/1	12	6	3
University of Chicago Clinics	Chicago	J. R. Lindsay	913	17	Yes	None	1	2	1/1	7/1	24	7	6
Indianapolis City Hospital	Indianapolis	R. S. Chappell	1,550	90	Yes	$30	1	0	4/1	7/1	12	12	8
Indiana University Hospitals	Indianapolis	C. H. McCaskey	1,228	85	Yes	$33	1	0	2/1	7/1	12	17	2
University Hospitals	Iowa City	D. M. Lierle	2,254	87	Yes	$30	4	4	1/1	7/1	60	37	12
Eye, Ear, Nose and Throat Hospital	New Orleans	J. R. Hume	10,005	15	Yes	None	6	0	Any time	Varies	24	...	
Johns Hopkins Hospital	Baltimore	S. J. Crowe	1,115	49	Yes	None	1	2	6/1	9/1	48	...	...
Beth Israel Hospital	Boston	L. Arkin and L. M. Freedman	1,695	39	Yes	None	1	0	1/1	7/1	12	...	...
Massachusetts Eye and Ear Infirmary	Boston	H. P. Mosher	3,405	26	Yes	None	1	6	1/1&6/1	Quart.	21	36	15
Memorial Hospital	Worcester, Mass.	H. J. Gibby	1,296	5	Yes	$42	1	0	4/1	7/1	12	8	6
University Hospital	Ann Arbor, Mich.	A. C. Furstenberg	2,607	79	Yes	$25	1	3	12/1	7/1	48	45	24
Henry Ford Hospital	Detroit	G. C. Kreutz	...	..	Yes	$110	1	1	1/1	9/1	24	13	3
University Hospitals [1]	Minneapolis	H. Newhart	883	16	Yes	$30	1	1	1/1	7/1	36	6	6
Barnes Hospital	St. Louis	L. W. Dean, Sr.	1,574	17	Yes	None	1	8	12/1	7/1	36	...	...
Jewish Hospital	St. Louis	S. B. Westlake	882	31	Yes	$63	1	0	12/1	7/1	12	2	2
St. Louis City Hospital	St. Louis		1,634	100	Yes	$100	1	0	12/1	7/1	12	...	...
St. Mary's Group of Hospitals [1]	St. Louis	W. E. Sauer	922	49	Yes	$25	1	0	3/15	7/1	24	5	2
Newark City Hospital	Newark, N. J.	W. P. Eagleton	2,429	100	Yes	$30	1	0	7/1	7/1	12	...	...
Brooklyn Eye and Ear Hospital	Brooklyn	W. C. Rieseltin	...	..	Yes	None	8	0	4/15	6/1,8/1,10/1	36	36	10
Kings County Hospital	Brooklyn	M. C. Myerson	5,330	100	Yes	None	2	0	6/1&11/1	1/1&7/1	12	87	32
Long Island College Hospital	Brooklyn	R. L. Moorhead	1,035	20	Yes	$22	1	1	1/1&7/1	1/1&7/1	12	1	0
Buffalo City Hospital [2]	Buffalo	J. F. Fairbairn	442	67	Yes	...	1	1	11/1	7/1	..	6	0
Buffalo General Hospital	Buffalo	J. F. Fairbairn	999	10	Yes	$25	1	1	11/1	7/1	24	8	3
Bellevue Hospital	New York City	A. W. Fowlkes	5,148	100	Yes	...	1	5	Any time	3/1,7/1,11/1	24	...	...
Manhattan Eye, Ear and Throat Hosp.	New York City	R. E. Buckley and J. G. Dwyer	14,817	..	Yes	None	1	8	Any time	Quart.	24	19	4
Metropolitan Hospital	New York City	L. E. Hetrick	1,113	100	Yes	$100	1	0	3/1	7/1	12	4	0
Mount Sinai Hospital	New York City	I. Friesner and R. Kramer	...	56	Yes	$30	1	1	7/1	1/1	24	...	...
New York Eye and Ear Infirmary	New York City	T. L. Saunders	5,008	38	Yes	None	1	7	3/1&9/1	Quart.	21	14	0
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	C. A. Heatly	1,312	58	Yes	$42	1	1	1/1	7/1	24	...	...
Sea View Hospital	Staten Island, N. Y.	M. C. Myerson	2,186	100	Yes	$100	2	0	5/1&11/1	1/1&7/1	12	0	0
Grasslands Hospital	Valhalla, N. Y.	M. T. Smith	662	90	Yes	$75	1	0	4/1	7/1	24	10	...
Cincinnati General Hospital	Cincinnati	S. Iglauer	1,436	87	Yes	*	1	1	2/15	7/1	24	17	10
City Hospital	Cleveland	W. B. Chamberlin	1,212	97	Yes	$37	1	1	1/1	1/1&7/1	18	9	...
St. Luke's Hospital	Cleveland	C. E. Pitkin	1,280	18	Yes	$25	1	1	12/1	7/1	24	10	5
University Hospitals	Cleveland	W. B. Chamberlin	2,212	30	Yes	$35	1	2	1/1	7/1	24	12	...
Univ. of Oregon Med. School Hosps.	Portland	A. Fenton	1,321	100	Yes	$30	1	0	1/1	7/1	12	6	3
Geo. F. Geisinger Memorial Hospital	Danville, Pa.	F. W. Davison	421	23	Yes	$50	1	0	2/1	7/1	12	2	1
Graduate Hospital of the Univ. of Pa.	Philadelphia		2,206	56	Yes	None	1	0	1/1	7/1	12	12	3
PATHOLOGY													
Hillman Hospital	Birmingham, Ala.	G. S. Graham	11,612	100	....	$30	1	0	1/15	7/1	12	1,142	261
Children's Hospital	Los Angeles	C. M. Hyland	4,134	52	....	$60	1	0	3/1	7/1	12	187	102
Los Angeles County Hospital	Los Angeles	N. G. Evans	53,906	100	....	$10	1	1	6/1&12/1	1/1&7/1	24	4,648	2,857
Mount Zion Hospital	San Francisco	G. Y. Rusk	3,907	17	....	$30	1	0	1/1	6/15	12	205	78
San Francisco Hospital	San Francisco	G. Y. Rusk and J. L. Carr	12,730	100	....	$25	1	0	2/1	7/1	12	1,029	515
University of California Hospital	San Francisco	J. F. Rinehart	6,262	..	....	$75	1	0	2/15	7/1	12	185	114
Denver General Hospital	Denver	E. T. Thorsness	14,157	100	....	$50	1	0	Any time	7/1	12	1,307	478
New Haven Hospital	New Haven, Conn.	M. C. Winternitz	8,121	43	....	...	1	1	12/15	7/1	..	433	280
Gallinger Municipal Hospital	Washington, D. C.	H. H. Leffler	16,037	100	....	$30	1	0	1/1	7/1	12	1,638	562
Garfield Memorial Hospital	Washington, D. C.	J. W. Lindsay	5,217	17	....	$30	1	0	12/1	7/1	12	306	78
Children's Memorial Hospital	Chicago	W. G. Hibbs	4,256	56	....	$60	1	0	1/1	7/1	12	171	101
Cook County Hospital	Chicago	R. H. Jaffé	72,880	100	....	None	4	0	1/1&7/1	1/1&7/1	12	6,637	1,242
Michael Reese Hospital	Chicago	O. Saphir	17,052	44	....	None	2	0	1/1&7/1	1/1&7/1	12	636	285
Mount Sinai Hospital	Chicago	I. Davidsohn	6,040	30	....	$75	1	0	5/1	7/1	48	222	57
Presbyterian Hospital	Chicago	C. W. Apfelbach	13,503	24	....	$50	1	2	Any time	1/1&7/1	36	270	159
Provident Hospital (col.)	Chicago	J. H. Lewis	2,791	11	....	$50	1	0	1/1	9/1	12	165	71
Research and Educational Hospital	Chicago	S. A. Levinson	5,848	100	....	$50	1	0	1/1	9/1	12	226	216
St. Luke's Hospital [3]	Chicago	E. F. Hirsch	11,661	6	....	....	2	0	Any time	Varies	12	208	147
University of Chicago Clinics	Chicago	H. G. Wells	1,640	17	....	$25	1	0	6/1	7/1	12	256	180
Evanston Hospital	Evanston, Ill.	E. L. Benjamin	7,274	6	....	$83	1	0	4/1	7/1	12	196	134
Indianapolis City Hospital	Indianapolis	H. C. Thornton	10,131	90	....	$20	1	0	4/1	7/1	12	610	314
Indiana University Hospitals	Indianapolis	F. Forry	9,423	83	....	$33	1	0	2/1	7/1	12	379	188
Methodist Episcopal Hospital	Indianapolis	H. M. Banks	19,305	10	....	$50	1	1	1/1	7/1	24	580	145
Ball Memorial Hospital	Muncie, Ind.	L. D. Montgomery	6,486	..	....	$100	1	0	1/1	7/1	12	260	117
University Hospitals	Iowa City	H. P. Smith	18,458	87	....	*	1	1	1/1	7/1	48	573	348
University of Kansas Hospitals	Kansas City, Kan.	H. R. Wahl	5,658	50	....	$61	1	0	12/1	7/1	12	258	203
Louisville City Hospital	Louisville, Ky.	A. J. Miller	10,643	50	....	$14	1	1	3/1	7/1	24	980	333
Charity Hospital	New Orleans	J. R. D'Aunoy	65,809	100	....	$7	2	0	7/1	7/1	12	2,740	1,384
Touro Infirmary	New Orleans	A. A. Lanford	4,050	22	....	$25	2	0	7/1	7/1	12	378	185
Baltimore City Hospitals	Baltimore	S. S. Blackman, Jr.	7,505	100	....	$12	1	1	1/1	7/1	24	1,557	671
Johns Hopkins Hospital	Baltimore	W. G. MacCallum	13,401	49	....	$50	3	0	6/1	9/1	12	628	552
Boston City Hospital	Boston	F. Parker, Jr.	40,130	94	....	None	1	2	Any time	1/1&7/1	36	2,703	840
Children's Hospital	Boston	S. Farber	5,500	2	....	....	1	0	Any time	Varies	12	157	68
Massachusetts General Hospital	Boston	T. B. Mallory	7,931	48	....	$42	1	3	Any time	1/1&7/1	24	760	356
New England Deaconess Hospital [10]	Boston	S. Warren	...	..	....	$25	9	0	1/1	7/1	12	254	156
Peter Bent Brigham Hospital	Boston	S. B. Wolbach	4,712	57	....	$83	1	2	Any time	Varies	48	337	203
University Hospital	Ann Arbor, Mich.	C. V. Weller	22,515	79	....	$25	1	0	12/1	7/1	12	790	453
City of Detroit Receiving Hospital	Detroit	O. A. Brines	21,917	100	....	$83	1	1	3/1	7/15	24	1,591	558
Henry Ford Hospital	Detroit	F. W. Hartman	11,949	..	....	$110	1	1	1/1	9/1	36	444	206
Eloise Hospital (Dr. Wm. J. Seymour Hospital)	Eloise, Mich.	S. E. Gould	14,594	100	....	$37	1	0	3/1	7/1	12	1,312	532
Ancker Hospital	St. Paul	J. F. Noble	16,753	98	....	$50	1	0	3/1	7/1	12	916	570
St. Joseph Hospital	Kansas City, Mo.	W. H. Kerr	4,739	18	....	$25	1	0	1/1	7/1	12	252	179
Barnes Hospital	St. Louis	L. Loeb	9,485	17	....	None	1	0	12/1	7/1	12	567	237
St. Louis City Hospital	St. Louis	S. H. Gray	30,506	100	....	$125	1	0	12/1	7/1	12	2,607	828
University of Nebraska Hospital	Omaha	J. P. Tollman	3,390	95	....	$50	1	0	12/1	7/1	24	102	146
Mary Hitchcock Memorial Hospital	Hanover, N. H.	H. N. Kingsford	3,768	16	....	$83	1	0	10/1	1/1&7/1	12	87	66
Newark Beth Israel Hospital	Newark, N. J.	W. A. Antopol	10,181	9	....	$25	4	1	Any time	10/1	24	433	141
Albany Hospital	Albany, N. Y.	A. W. Wright	10,456	60	....	$15	5	0	12/15	7/1	12	499	356
Bender Hygienic Laboratory	Albany, N. Y.	J. J. Clemmer, Jr.	*	..	....	$75	2	0	Any time	Varies	12	...	102
Jewish Hospital	Brooklyn	M. Lederer	15,337	32	....	$50	1	0	12/1	7/1	12	577	195

Numerical and other references will be found on page 707.

PATHOLOGY—(Continued)		**Chief of Service**	**Inpatients Treated**	**Per Cent Free**	**Outpatient Service**	**Beginning Salary**	**Residents**	**Assistant Residents**	**Apply Before**	**Service Begins**	**Available Training (Months)**	**Deaths**	**Autopsies**
Kings County Hospital	Brooklyn	W. W. Hala	54,751	100	....	$50	1	0	1/1	7/1	12	5,909	940
Long Island College Hospital	Brooklyn	J. R. Oliver	9,020	20	....	$45	1	0	1/1	7/1	12	393	163
St. John's Hospital	Brooklyn	T. J. Curphey	4,968	55	....	$25	1	0	1/1	7/1	12	265	113
Buffalo City Hospital[2]	Buffalo	W. F. Jacobs	11,130	67	....	....	1	1	11/1	7/1	..	1,216	394
Buffalo General Hospital	Buffalo	K. L. Terpian	10,166	10	....	$25	1	0	11/1	7/1	12	627	263
Millard Fillmore Hospital	Buffalo	N. W. Elton	6,183	22	....	$25	1	0	11/1	7/1	12	297	135
Meadowbrook Hospital	Hempstead, N. Y.	T. J. Curphey	4,729	90	....	$100	1	0	1/1	7/1	12	430	166
Mary Immaculate Hospital	Jamaica, N. Y.	E. F. Koch	7,078	6	....	None	1	0	1/1	7/1	12	355	138
Queens General Hospital	Jamaica, N. Y.	A. Angrist	12,654	100	....	$15	1	0	1/1	7/1	12	815	471
Harlem Hospital	New York City	Solomon Weintraub	17,318	100	....	$15	2	0	1/1&7/1	1/1&7/1	12	1,758	423
Lenox Hill Hospital	New York City	G. L. Rohdenburg	10,528	23	....	None	1	0	1/1	7/1	12	328	142
Lincoln Hospital	New York City	C. R. Brown	9,436	97	....	None	1	0	1/1	7/1	12	791	324
Metropolitan Hospital	New York City	A. Saccone	11,830	100	....	$70	1	0	3/1	7/1	12	1,308	216
Montefiore Hosp. for Chronic Diseases	New York City	D. Marine	2,026	86	....	$30	1	0	1/1	7/1	12	575	387
Morrisania City Hospital	New York City	W. Aronson	13,360	100	....	$15	1	0	1/1	7/1	12	1,084	328
New York City Hospital	New York City	J. R. Lisa	8,645	100	....	$100	1	0	1/1	7/1	12	690	158
New York Hospital	New York City	E. L. Opie	14,584	5	....	None	1	0	1/1	7/1	36	563	293
N.Y.Post-Grad. Med. School and Hosp.	New York City	W. J. MacNeal	9,511	30	....	None	1	0	1/1	7/1	12	333	99
Presbyterian Hospital	New York City	J. W. Jobling	18,030	30	....	....	2	0	Any time	7/1&9/1	12	518	237
St. Luke's Hospital	New York City	F. C. Wood	8,009	50	....	$100	1	2	Any time	1/1&7/1	24	375	161
Willard Parker Hospital	New York City	V. B. Dolgopol	5,737	100	....	$100	1	0	1/1	7/1	12	133	63
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	G. H. Whipple	12,721	58	....	$42	1	2	1/1	7/1	12	660	455
Grasslands Hospital	Valhalla, N. Y.	G. Dalldorf	6,414	90	....	$117	1	1	10/1	1/1	24	466	291
Duke Hospital	Durham, N. C.	W. D. Forbus	10,750	64	....	$42	1	2	1/1	7/1	48	587	246
Cincinnati General Hospital	Cincinnati	C. Austin	7,575	95	....	*	1	4	2/15	7/1	36	672	172
City Hospital	Cleveland	H. S. Reichle	14,314	97	....	$65	1	1	1/1	7/1	24	1,659	672
Mount Sinai Hospital	Cleveland	B. S. Kline	7,868	23	....	$50	1	0	12/1	7/1	12	361	64
St. Luke's Hospital	Cleveland	R. Dominguez	10,048	18	....	$25	1	1	12/1	7/1	24	414	97
St. Vincent Charity Hospital	Cleveland	D. J. Rehbock	5,429	55	....	....	1	0	12/1	7/1	12	386	143
University Hospitals	Cleveland	H. T. Karsner	17,308	65	....	$35	1	1	1/1	7/1	24	572	236
Miami Valley Hospital	Dayton, O.	W. M. Simpson	9,115	28	....	$75	1	0	12/1	7/1	12	574	192
State University and Crippled Children's Hospitals	Oklahoma City	H. G. Jeter	6,079	67	....	$50	1	0	1/1	7/1	12	333	189
St. Vincent's Hospital	Portland, Ore.	T. D. Robertson	10,396	15	....	$25	1	0	1/1	7/1	12	419	148
Univ. of Oregon Med. School Hosps.	Portland	F. R. Menne	7,369	100	....	$30	2	0	1/1	7/1	12	785	482
Abington Memorial Hospital	Abington, Pa.	A. Bowman	5,225	32	....	$100	1	0	1/1	7/1	12	382	100
Graduate Hosp. of the Univ. of Pa.	Philadelphia	E. A. Case	6,660	36	....	None	1	0	1/1	7/1	12	251	90
Hospital of the Univ. of Pennsylvania	Philadelphia	E. B. Krumbhaar	10,434	31	....	None	2	0	1/1	7/1	12	317	294
Pennsylvania Hospital	Philadelphia	J. T. Bauer	10,387	31	....	$42	1	0	Any time	7/1	12	421	213
Philadelphia General Hospital	Philadelphia	J. H. Clark	21,175	93	....	$100	2	0	7/1	7/1	12	3,828	1,567
Presbyterian Hospital	Philadelphia	K. Fowler	4,771	51	....	$50	1	0	3/1	7/1	36	392	130
Allegheny General Hospital	Pittsburgh	S. R. Haythorn	6,545	55	....	$81	2	0	2/1	7/1	12	556	78
Children's Hospital	Pittsburgh	M. L. Menten	2,623	69	....	$35	1	0	1/1	7/1	12	173	75
Mercy Hospital	Pittsburgh	H. H. Permar	11,406	35	....	$80	2	0	12/1	7/1	12	571	140
St. Francis Hospital	Pittsburgh	A. J. Bruecken	8,318	14	....	$50	3	0	11/1	7/1	12	500	154
Western Pennsylvania Hospital	Pittsburgh	P. Gross	10,696	55	....	None	1	0	1/1	7/1	12	488	170
Reading Hospital	Reading, Pa.	E. D. Funk	6,133	48	....	$81	1	0	1/1	7/1	12	299	185
Rhode Island Hospital	Providence	B. E. Clarke	10,406	40	....	$100	1	0	Any time	Varies	12	758	331
John Gaston Hospital	Memphis, Tenn.	H. C. Schmeisser	14,871	95	....	$32	2	0	1/1	7/1	12	1,415	232
Vanderbilt University Hospital	Nashville, Tenn.	E. W. Goodpasture	4,080	32	....	$35	1	1	3/15	7/1	24	294	158
Milwaukee County General Hospital	Wauwatosa, Wis.	J. C. Grill	17,940	100	....	$100	1	0	5/1	7/16	12	1,369	469
PEDIATRICS													
Children's Hospital	Birmingham, Ala.	A. A. Walker	986	86	Yes	$50	1	0	3/1	7/1	12	73	11
Hillman Hospital	Birmingham, Ala.	A. A. Walker	1,407	100	Yes	$30	1	0	1/15	7/1	12	118	37
California Babies Hospital	Los Angeles	A. J. Scott	495	47	Yes	....	1	0	1/1	7/1	12	4	4
Children's Hospital	Los Angeles	V. F. Stork	1,427	59	Yes	$40	1	8	3/1	7/1	36	159	136
Los Angeles County Hospital	Los Angeles	O. Reiss	2,649	100	Yes	$10	1	6/1&12/1	1/1&7/1	24	186	107
White Memorial Hospital	Los Angeles	E. E. Moody	156	2	Yes	$80	1	0	3/1	7/1	36	9	5
Children's Hospital of the East Bay	Oakland, Calif.	C. D. Sweet	2,358	2	Yes	$25	1	1	3/1	7/1	24	52	21
Hospital for Children	San Francisco	C. F. Geiston	839	10	Yes	$25	1	0	1/1	7/1	12	....	....
San Francisco Hospital	San Francisco	W. A. Reilly and R. P. Seltz	995	100	No	$25	2	0	2/1	7/1	12	32	....
Stanford University Hospitals	San Francisco	H. K. Faber	514	4	Yes	$25	1	1	1/1	7/1	24	19	15
University of California Hospital	San Francisco	F. S. Smyth	532	..	Yes	$25	1	1	2/15	7/1	24	41	29
Children's Hospital	Denver	F. P. Gengenbach	3,319	18	No	$50	1	4	12/1	7/1	24	82	59
Denver General Hospital	Denver	....	969	100	No	$30	1	0	1/1	7/1	12	....	....
New Haven Hospital	New Haven, Conn.	G. F. Powers	1,298	43	Yes	....	1	3	12/15	7/1	..	68	39
Children's Hospital	Washington, D. C.	F. Leech	6,050	85	Yes	$30	1	8	1/1&7/1	1/1&7/1	24	312	178
Freedmen's Hospital (col.)	Washington, D. C.	....	645	86	Yes	$32	1	0	3/1	7/1	12	32	31
Gallinger Municipal Hospital	Washington, D. C.	....	1,889	100	No	$30	2	0	1/1	7/1	12	173	53
Grady Hospital	Atlanta, Ga.	M. H. Roberts	1,240	100	Yes	$47	1	0	1/1	7/1	12	148	23
Henrietta Eglestone Hosp. for Children	Atlanta, Ga.	M. H. Roberts	1,050	51	Yes	$27	2	0	1/1&7/1	1/1&7/1	12	77	28
University Hospital	Augusta, Ga.	C. M. Burpee	898	50	Yes	$50	1	0	11/1	7/1	12	101	31
Children's Memorial Hospital	Chicago	J. Brennemann	4,256	50	Yes	None	1	15	1/1&7/1	1/1&7/1	36	171	101
Cook County Hospital	Chicago	M. L. Blatt	4,735	100	Yes	None	6	0	1/1&7/1	1/1&7/1	12	486	111[3]
Michael Reese Hospital	Chicago	J. H. Hess and A. Levinson	3,586	44	Yes	$160	1	0	1/1&7/1	1/1&7/1	12	....	....
Presbyterian Hospital	Chicago	C. G. Grulee	960	24	Yes	$50	1	0	Any time	7/1	12	47	28
Provident Hospital (col.)	Chicago	W. H. Maddux	424	11	Yes	$50	1	0	1/1	9/1	12	13	6
Research and Educational Hospital	Chicago	J. H. Hess	153	100	Yes	$50	1	0	1/1	7/1	12	10	10
University of Chicago Clinics	Chicago	F. W. Schultz	845	17	Yes	$25	1	2	1/1	7/1	24	42	26
Indiana University Hospitals	Indianapolis	M. Winters	1,313	85	Yes	$33	2	0	2/1	7/1	12	151	60
University Hospitals	Iowa City	P. C. Jeans	1,073	87	Yes	$30	1	2	1/1	7/1	24	69	37
University of Kansas Hospitals	Kansas City, Kan.	F. C. Neff	713	50	Yes	$45	1	0	12/1	7/1	12	44	41
Louisville City Hospital	Louisville, Ky.	P. F. Barbour	957	90	Yes	$14	1	2	3/1	7/1	36	118	34
Charity Hospital	New Orleans	....	....	100	Yes	$12	1	0	7/1	7/1	24	....	....
Touro Infirmary	New Orleans	L. R. DeBuys	404	32	Yes	$25	1	0	1/1	7/1	12	....	....
Johns Hopkins Hospital	Baltimore	E. A. Park	995	49	Yes	None	1	2	6/1	9/1	36	156	....
Union Memorial Hospital	Baltimore	....	1,157	21	Yes	$12	1	1	1/1	7/1	24	....	....
Boston City Hospital	Boston	M. J. English	4,554	94	Yes	None	1	4	Any time	Varies	36	298	31
Boston Floating Hospital	Boston	E. W. Barron	1,780	100	Yes	$10	1	3	1/1	7/1,8/1,10/1	24	39	29
Children's Hospital	Boston	K. D. Blackfan	823	2	Yes	....	1	2	Any time	Varies	24	50	29
Massachusetts General Hospital	Boston	H. L. Higgins	387	48	Yes	$42	1	0	Any time	10/1	12	....	....

Numerical and other references will be found on page 707.

V 1
193

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Apply Before	Service Begins	Available Training (Months)	Deaths	Autopsies
PEDIATRICS—(Continued)													
University Hospital	Ann Arbor, Mich.	D. M. Cowie	2,919	79	Yes	$25	2	8	12/1	7/1	24	93	48
Children's Hospital	Detroit	T. B. Cooley	2,646	76	Yes	$25	1	9	12/1	7/1	36	438	239
Henry Ford Hospital	Detroit	J. A. Johnston	.....	....	Yes	$130	1	2	1/1	9/1	60	54	39
Minneapolis General Hospital [1]	Minneapolis	A. V. Stoesser	866	100	Yes	$25	3	0	1/1&7/1	1/1&7/1	12	44	24
University Hospitals [1]	Minneapolis	I. McQuarrie	1,322	16	Yes	$50	1	1	1/1	7/1	36	93	61
Wheatley-Provident Hospital (col.)	Kansas City, Mo.		144	14	No	$40	1	0	5/1	7/1	24	6	1
St. Louis Children's Hospital	St. Louis	A. F. Hartmann	3,302	39	Yes	None	1	8	1/1&7/1	1/1&7/1	36	154	94
St. Louis City Hospital	St. Louis		1,184	100	Yes	$100	1	0	12/1	7/1	12	....	....
St. Mary's Group of Hospitals	St. Louis	J. A. Rossen	1,117	49	Yes	$25	2	0	3/15	7/1	34	60	36
Jersey City Hospital	Jersey City, N. J.	J. A. Sullivan	113	50	Yes	$100	1	0	1/1	7/1	12	51	14
Cumberland Hospital	Brooklyn	T. B. Givan	1,741	100	Yes	$100	1	0	3/1	7/1	12	71	57
Jewish Hospital	Brooklyn	B. Kramer	628	32	Yes	$50	1	5	12/1	7/1	24	78	33
Kings County Hospital	Brooklyn	F. L. Parrish and G. E. Brockway	2,638	100	Yes	None	1	1	6/1&11/1	1/1&7/1	12	315	112
Long Island College Hospital	Brooklyn	C. A. Weymuller	451	20	Yes	$22	1	2	1/1	7/1	24	54	35
Norwegian Lutheran Deaconesses' Home and Hospital	Brooklyn		282	12	Yes	None	1	0	1/1	7/1	12	....	....
Buffalo City Hospital [2]	Buffalo	H. R. Lohnes	329	67	Yes	....	1	1	11/1	7/1	..	26	15
Children's Hospital	Buffalo		3,765	45	Yes	$25	2	11	1/1	1/1&7/1	24	109	66
Queens General Hospital	Jamaica, N. Y.	W. C. A. Steffen	1,370	100	Yes	$15	1	2	1/1	7/1	24	88	20
Babies Hospital	New York City	R. McIntosh	2,984	40	Yes	None	1	11	Any time	1/1&7/1	42	131	77
Bellevue Hospital	New York City	Chas. H. Smith	2,639	100	Yes	....	1	6	Any time	Quart.	36	196	138
Flower-Fifth Avenue Hospital	New York City	J. T. Simonson	340	44	Yes	$50	1	0	12/1	7/1	12	11	4
Harlem Hospital	New York City	M. Gleich	898	100	Yes	$15	1	0	1/1	7/1	12	124	71
Metropolitan Hospital	New York City	E. A. Durand	916	100	Yes	$100	2	0	3/1	7/1	12	98	24
Mount Sinai Hospital	New York City	B. Schick	.....	56	Yes	$ 0	1	1	1/1&7/1	1/1&7/1	12	....	....
New York Foundling Hospital [14]	New York City	J. Giblin	2,897	91	Yes	$25	1	8	1/1&7/1	1/1&7/1	24	65	35
New York Hospital	New York City	S. Z. Levine	1,305	5	Yes	None	1	5	1/1	7/1	60	170	71
N.Y. Post-Grad. Med. School and Hosp.	New York City	A. G. DeSanctis	735	30	Yes	$0	1	0	7/1	1/1	36	45	19
St. Luke's Hospital	New York City	F. E. Johnson	454	48	Yes	None	1	1	1/1&7/1	1/1&7/1	12	....	....
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	S. W. Clausen	879	58	Yes	$42	1	3	1/1	7/1	36	49	26
Sea View Hospital	Staten Island, N. Y.	B. Schick	432	100	No	$100	4	0	5/1&11/1	1/1&7/1	12	24	8
Syracuse Memorial Hospital	Syracuse, N. Y.	B. C. Doust	1,114	45	Yes	None	1	0	1/1	7/1	12	60	20
Grasslands Hospital	Valhalla, N. Y.	F. A. D. Barnes	538	50	Yes	$75	1	1	4/1&10/1	1/1&7/1	24	23	19
Duke Hospital	Durham, N. C.	W. D. Davison	979	64	Yes	$42	1	1	7/1	7/1	48	66	35
Children's Hospital	Akron, O.	E. A. Weeks	904	52	Yes	$60	1	0	1/1	7/1	12	97	56
Children's Hospital	Cincinnati	A. G. Mitchell	4,469	77	Yes	$25	1	12	1/1	7/1	36	166	99
Cincinnati General Hospital	Cincinnati	A. G. Mitchell	1,312	87	Yes	*	2	11	2/15	7/1	24	165	78
St. Vincent Charity Hospital	Cleveland	W. M. Champion	152	35	Yes	$35	1	0	12/1	7/1	12	12	4
University Hospitals [1]	Cleveland	H. J. Gerstenberger	766	30	Yes	$35	5	1	1/1	7/1	48	61	....
Children's Hospital	Columbus, O.	E. G. Horton	2,636	87	Yes	$60	3	0	1/1&7/1	1/1&7/1	12	113	59
Univ. of Oregon Med. School Hosps.	Portland	J. B. Bilderback	1,604	100	Yes	$30	2	0	1/1	7/1	12	101	77
Children's Hospital	Philadelphia	J. C. Gittings	2,292	66	Yes	None	1	10	Any time	Quart.	12	169	74
Children's Hospital of the Mary J. Drexel Home	Philadelphia		878	10	Yes	$100	1	0	4/1	7/1	12	17	8
Hospital of the Univ. of Pennsylvania	Philadelphia	J. C. Gittings	323	31	Yes	None	1	0	1/1	7/1	12	35	32
Philadelphia General Hospital	Philadelphia		1,195	95	Yes	$100	1	0	7/1	7/1	12	....	....
St. Christopher's Hosp. for Children	Philadelphia	T. C. Kelly	2,185	32	Yes	$75	4	0	2/1	7/1	12	37	17
Children's Hospital	Pittsburgh	H. T. Price	2,623	69	Yes	$35	1	3	1/15	1/1&7/1	24	173	75
Roper Hospital	Charleston, S. C.	M. W. Beach	1,547	78	Yes	$40	1	0	1/1	7/1	12	69	25
Children's Hospital	Chattanooga, Tenn.	W. D. Anderson	1,427	82	Yes	$50	2	0	1/1	7/1	12	135	41
John Gaston Hospital	Memphis, Tenn.	E. C. Mitchell	1,867	95	Yes	$12	1	0	1/1	7/1	12	146	39
Vanderbilt University Hospital	Nashville, Tenn.	H. R. Casparis	849	32	Yes	$35	1	2	3/15	7/1	24	84	42
Medical College of Va., Hosp. Division	Richmond	St. G. T. Grinnan	1,155	30	Yes	$25	1	0	2/1	7/1	12	108	71
University of Virginia Hospital	University	L. T. Royster	882	26	Yes	$50	1	0	12/1	7/1	12	64	22
Children's Orthopedic Hospital	Seattle	J. I. Durand and H. J. Wyckoff	1,336	53	Yes	$62	1	0	Any time	7/1	12	41	33
State of Wisconsin General Hospital	Madison	J. E. Gonce, Jr.	.....	88	Yes	$25	1	0	Any time	7/1	36	....	....
Milwaukee Children's Hospital	Milwaukee		3,377	64	Yes	$30	1	0	1/1&7/1	1/1&7/1	24	143	63
PHYSICAL THERAPY													
Stanford University Hospitals	San Francisco	W. H. Northway	.....	4	Yes	$25	1	0	1/1	7/1	12	....	....
Michael Reese Hospital	Chicago	C. O. Molander	2,000	44	Yes	$50	1	0	1/1	7/1	12	....	....
PLASTIC SURGERY													
Kings County Hospital	Brooklyn	W. A. Coakley	335	100	Yes	$15	1	0	1/1	7/1	12	....	....
RADIOLOGY													
Los Angeles County Hospital	Los Angeles	R. A. Carter	53,566	100	....	$10	1	2	6/1&12/1	1/1&7/1	36	4,648	2,857
San Francisco Hospital	San Francisco	L. Bryan and L. H. Garland	12,730	100	....	$100	2	0	2/1	7/1	12	1,029	515
Stanford University Hospitals	San Francisco	R. R. Newell	9,636	4	....	$25	1	1	1/1	7/1	24	258	135
University of California Hospital	San Francisco	R. S. Stone	6,372	....	....	$25	1	2	2/15	7/1	24	185	114
New Haven Hospital	New Haven, Conn.	H. M. Wilbur	8,121	45	....	....	1	1	12/15	7/1	12	433	265
Garfield Memorial Hospital	Washington, D. C.	E. A. Merritt	6,486	17	....	$50	2	0	12/1	7/1	24	303	78
Cook County Hospital	Chicago	M. J. Hubeny	72,880	100	....	$50	1	0	1/1	7/1	24	6,637	1,242
Michael Reese Hospital	Chicago	R. A. Arens	17,602	44	....	$25	1	0	1/1	7/1	36	656	285
Research and Educational Hospital	Chicago	A. Hartung	5,848	100	....	$50	1	0	1/1	9/1	12	224	216
St. Luke's Hospital [1]	Chicago	J. L. Jenkinson	11,661	6	....	$50	1	1	Any time	5/1&10/1	36	598	147
University of Chicago Clinics	Chicago	P. C. Hodges	7,640	17	....	None	1	2	1/1	7/1	36	256	180
University Hospitals	Iowa City	H. D. Kerr	18,438	87	....	$30	1	2	1/1	7/1	24	572	248
Charity Hospital	New Orleans	A. Granger	65,809	100	....	$25	1	0	7/1	7/1	24	2,740	1,374
Touro Infirmary	New Orleans	J. C. Rodick	10,650	22	....	$25	1	0	1/1	7/1	12	378	185
Johns Hopkins Hospital	Baltimore	J. W. Pierson	14,401	49	....	$50	1	0	6/1	9/1	12	628	522
University Hospital	Baltimore	H. J. Walton	8,363	47	....	None	1	1	12/1	7/1	24	350	231
Beth Israel Hospital	Boston	S. A. Robins	5,847	39	....	....	1	0	1/1	7/1	12	217	163
Boston City Hospital	Boston	P. F. Butler	40,130	94	....	None	1	2	Any time	2/1&7/1	12	2,403	840
Massachusetts General Hospital	Boston	G. W. Holmes	7,331	48	....	$42	1	2	Any time	1/1&7/1	36	760	356
Massachusetts Memorial Hospitals	Boston	G. Levene	6,992	27	....	$ 0	1	1	1/1	7/1	36	226	122
Peter Bent Brigham Hospital	Boston	M. C. Sosman	4,712	57	....	None	1	2	Any time	7/1	36	337	203
University Hospital	Ann Arbor, Mich.	F. J. Hodges	22,515	79	....	$25	1	2	12/1	7/1	36	700	453
City of Detroit Receiving Hospital	Detroit	J. C. Kenning and J. E. Lofstrom	21,917	100	....	$83	1	0	3/1	7/15	24	1,391	558

Numerical and other references will be found on page 707.

109
37

			Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Apply Before	Service Begins	Available Training (Months)	Deaths	Autopsies
RADIOLOGY—(Continued)		**Chief of Service**											
Henry Ford Hospital	Detroit	H. P. Doub	11,569	...	....	$110	1	2	1/1	9/1	36	444	266
Hurley Hospital	Flint, Mich	M. W. Clift	8,685	60	....	$75	1	0	1/1	7/1	36	686	278
University Hospitals [1]	Minneapolis	L. G. Rigler	8,872	16	....	$30	1	1	1/1	7/1	36	464	324
St. Louis City Hospital	St. Louis	L. Sante	20,506	100	....	$75	1	2	12/1	7/1	36	2,007	859
University of Nebraska Hospital	Omaha	H. B. Hunt	5,200	95	....	$50	1	1	1/1&7/1	1/1&7/1	36	162	146
Newark Beth Israel Hospital	Newark N. J.	N. J. Furst	10,181	9	....	...	1	0	Any time	10/1	12	433	141
Kings County Hospital	Brooklyn	R. A. Rendich	54,761	100	....	$100	1	1	6/1&11/1	1/1&7/1	24	5,100	940
Long Island College Hospital	Brooklyn	A. L. L. Bell	9,020	20	....	$45	1	0	1/1	7/1	12	393	163
Buffalo City Hospital [2]	Buffalo	C. R. Orr	11,130	67	....	...	1	1	12/1	7/1	...	1,716	294
Queens General Hospital	Jamaica, N. Y.	I. S. Startz	12,654	100	....	$15	1	0	1/1	7/1	12	815	471
New Rochelle Hospital	New Rochelle, N. Y.	A. J. S. Chilko	4,701	50	....	$20	1	0	12/1	1/1	18	222	71
Bellevue Hospital [13]	New York City	L. J. Friedman	62,112	100	....	....	5	0	Any time	1/1&7/1	12	3,485	1,038
Beth Israel Hospital	New York City	I. S. Hirsch	10,151	44	....	None	3	0	Any time	1/1&7/1	12	329	119
Lenox Hill Hospital	New York City	W. H. Stewart	10,298	23	....	$50	1	0	1/1	7/1	12	328	142
Montefiore Hosp. for Chronic Dis. [14]	New York City	M. Lenz	2,026	85	....	$50	2	0	1/1&7/1	1/1&7/1	12	575	387
Mount Sinai Hospital	New York City	L. Jaches	14,749	56	....	None	1	2	1/1&7/1	1/1&7/1	18	828	460
New York Hospital	New York City	J. R. Carty	14,584	5	....	$25	1	1	1/1	7/1	36	563	293
N. Y. Post Grad. Med. School and Hosp.	New York City	W. H. Meyer	9,311	30	....	$60	1	0	1/1	7/1	12	333	93
Presbyterian Hospital	New York City	R. Golden	18,030	50	....	$42	1	2	Any time	10/1	36	518	217
St. Luke's Hospital	New York City	E. J. Ryan	8,009	48	....	...	1	0	Any time	1/1	12	375	161
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	S. L. Warren	12,721	58	....	$42	1	1	1/1	7/1	24	600	455
Sea View Hospital	Staten Island, N. Y.	E. Krulf	2,009	100	....	$100	1	0	11/1	7/1	12	630	270
Grasslands Hospital	Valhalla, N. Y.	W. D. Buckworth	6,414	90	....	$117	1	0	Any time	9/1	24	466	291
Duke Hospital	Durham, N. C.	R. J. Reeves	10,750	64	....	$42	1	1	1/1	7/1	24	387	246
Cincinnati General Hospital	Cincinnati	H. G. Reineke	16,618	87	....	*	1	1	2/15	7/1	24	1,607	772
Jewish Hospital	Cincinnati	Sami. Brown	5,593	30	....	$150	1	0	12/1	7/1	12	190	69
City Hospital	Cleveland	H. Hauser	14,314	97	....	$30	1	1	1/1	7/1	24	1,620	673
University Hospitals	Cleveland	Eugene Freedman	17,798	30	....	$30	1	0	1/1	7/1	12	572	326
State University and Crippled Children's Hospitals	Oklahoma City	J. E. Heatley	6,679	67	....	$100	1	0	1/1	7/1	12	333	189
Univ. of Oregon Med. School Hosps.	Portland	D. L. Palmer	7,569	100	....	$30	1	0	1/1	7/1	24	785	481
Hospital of the Univ. of Pennsylvania	Philadelphia	H. K. Pancoast	10,434	31	....	None	1	0	1/1	7/1	12	917	304
Pennsylvania Hospital	Philadelphia	P. A. Bishop	10,287	31	....	$50	2	0	Any time	7/1	12	421	213
Philadelphia General Hospital	Philadelphia	H. K. Pancoast	21,175	95	....	$100	1	0	7/1	7/1	12	3,828	1,067
Roper Hospital	Charleston, S. C.	H. Rudisill, Jr.	7,537	78	....	$40	1	0	1/1	7/1	12	582	205
John Sealy Hospital	Galveston, Tex.	J. B. Johnson	6,033	60	....	None	1	0	12/1	7/15	12	385	230
Medical College of Va., Hosp. Division	Richmond	P. H. Sandeville	7,130	100	....	$20	1	0	2/1	7/1	12	909	576
University of Virginia Hospital	University	V. W. Archer	7,761	26	....	None	1	1	12/1	7/1	36	404	155
State of Wisconsin General Hospital	Madison	E. A. Pohle	11,243	88	....	$25	1	2	Any time	7/1	36	355	245
SURGERY													
Hillman Hospital	Birmingham, Ala	J. M. Mason and D. S. Moore	1,632	100	Yes	$40	2	0	1/15	7/1	12	180	46
Employees' Hospital of the Tennessee Coal, Iron and Railroad Co.	Fairfield, Ala	L. Noland	2,094	...	Yes	$100	2	0	1/1	7/1	12	40	10
Fresno County General Hospital	Fresno, Calif.	J. H. Pettis	2,924	90	Yes	$60	1	1	1/1	7/1	24	40	24
Cedars of Lebanon Hospital	Los Angeles		1,613	19	Yes	$75	1	0	12/1	7/1	12	...	35
Los Angeles County Hospital	Los Angeles		4,672	100	Yes	$10	1	5	6/1&12/1	1/1&7/1	36	300	264
White Memorial Hospital	Los Angeles	G. Thomasson	665	2	Yes	$80	1	0	5/1	7/1	36	30	10
Alameda County Hospital	Oakland, Calif.	L. P. Adams and C. A. Dukes	4,330	100	No	$40	1	3	2/1	7/1	24	...	...
San Bernardino County Charity Hosp.	San Bernardino, Calif.		652	100	No	$75	1	0	4/1	7/1	12	70	28
San Diego County General Hospital	San Diego, Calif.		1,696	85	Yes	$75	1	0	4/1	7/1	12	...	...
Hospital for Children	San Francisco		650	10	Yes	$25	1	0	1/1	7/1	25	...	...
Mary's Help Hospital	San Francisco	I. W. Thorne	1,233	6	Yes	$12	1	0	2/1	7/1	12	40	30
Mount Zion Hospital	San Francisco	H. Brunn	1,792	17	Yes	$30	1	0	1/1	6/15	12	53	16
San Francisco Hospital [17]	San Francisco	H. Brunn and L. Ehrsener	2,214	100	No	$25	6	0	2/1	7/1	12	244	...
Stanford University Hospitals	San Francisco	E. F. Holman	1,566	4	Yes	$25	1	3	1/1	7/1	36	86	42
University of California Hospital	San Francisco	H. C. Naffziger	1,214	...	Yes	$25	1	8	2/15	7/1	36	49	32
Santa Clara County Hospital	San Jose, Calif.		1,271	100	Yes	$155	1	0	1/1	7/1	12	27	...
Colorado General Hospital	Denver	C. F. Hagner	1,200	90	Yes	$75	1	0	12/1	7/1	12	...	...
Grace Hospital	New Haven, Conn.	T. H. Russell	1,163	10	Yes	$60	1	0	1/1	7/1	12	50	16
New Haven Hospital [17]	New Haven, Conn.	S. C. Harvey	2,694	43	Yes	...	1	9	12/15	7/1	..	110	62
Central Disp. and Emergency Hospital	Washington, D. C.	J. F. Mitchell	1,918	21	Yes	$30	1	2	4/1	7/1	24	...	...
Freedmen's Hospital (col.)	Washington, D. C.	A. M. Curtis	761	86	Yes	$32	1	0	5/1	7/1	12	46	5
Gallinger Municipal Hospital	Washington, D. C.	S. S. White	2,021	80	Yes	$30	4	0	1/1	7/1	12	130	72
Garfield Memorial Hospital	Washington, D. C.	C. S. White	3,412	17	Yes	$30	1	1	12/1	7/1	24	...	...
Grady Hospital	Atlanta, Ga.		3,591	100	Yes	$30	2	0	1/1	7/1	12	210	47
University Hospital	Augusta, Ga.	J. H. Sherman	2,715	50	Yes	$50	3	0	11/1	7/1	12	160	50
Augustana Hospital	Chicago	N. M. Percy	1,647	15	Yes	None	1	0	12/1	7/1	12	60	14
Passavant Memorial Hospital	Chicago	C. Davis	1,394	10	Yes	None	1	2	1/1&7/1	1/1&7/1	36	66	24
Presbyterian Hospital	Chicago	V. C. David	2,112	24	Yes	$62	1	1	Any time	1/1&7/1	24	47	29
Provident Hospital (col.)	Chicago	C. G. Roberts	1,197	11	Yes	$50	1	0	1/1	9/1	12	67	11
Research and Educational Hospital	Chicago	E. Oldberg	940	100	Yes	$50	1	2	5/1	9/1	36	54	32
St. Luke's Hospital	Chicago		4,456	6	Yes	None	5	0	1/1	7/1	12	150	37
University of Chicago Clinics	Chicago	D. B. Phemister	1,873	17	Yes	$25	4	1	1/1	7/1	12	68	39
Wesley Memorial Hospital	Chicago	R. W. McNealy	1,722	24	No	$75	1	0	Any time	1/1	12	29	17
Evanston Hospital	Evanston, Ill.	F. Christopher	1,847	6	Yes	$83	1	0	4/1	7/1	12	55	39
Indianapolis City Hospital	Indianapolis		1,553	90	Yes	$30	4	0	4/1	7/1	12	161	33
Indiana University Hospitals	Indianapolis	W. D. Gatch	1,405	83	Yes	$33	2	0	2/1	7/1	12	167	18
University Hospitals	Iowa City	F. R. Peterson	3,067	87	Yes	$30	3	6	1/1	7/1	60	151	101
University of Kansas Hospitals	Kansas City, Kan.	T. G. Orr	1,123	50	Yes	$45	1	2	12/1	7/1	36	84	62
St. Joseph's Hospital	Lexington, Ky.	.....	...	3	Yes	$40	1	0	3/1	7/1	12	...	...
Louisville City Hospital	Louisville, Ky.	C. E. Bird	5,152	90	Yes	$14	1	18	3/1	7/1	36	308	62
Charity Hospital	New Orleans		16,308	100	Yes	$37	1	5	1/1	7/1	48	681	124
Touro Infirmary	New Orleans	I. Cohn	3,168	32	Yes	$25	1	0	1/1	7/1	12	...	...
Baltimore City Hospitals	Baltimore	A. M. Shipley	2,302	100	No	$12	1	4	1/1	7/1	24	239	55
Bon Secours Hospital	Baltimore	E. Novak	2,143	25	Yes	$50	2	0	12/1	7/1	12	...	...
Church Home and Infirmary	Baltimore		1,850	50	Yes	$30	1	2	12/1	7/1	36	41	24
Johns Hopkins Hospital	Baltimore	D. D. Lewis	3,643	40	Yes	None	1	5	4/1	9/1	84	173	...
Maryland General Hospital	Baltimore	R. F. Bay	2,303	44	Yes	$35	1	1	11/1	7/1	24	123	36
Mercy Hospital	Baltimore	W. D. Wise	3,246	51	Yes	$30	1	4	1/1	7/1	24	100	18
Provident Hosp. and Free Disp. (col.)	Baltimore		1,077	79	Yes	$25	1	2	5/1	10/15	48	...	...
St. Agnes' Hospital	Baltimore		653	38	Yes	...	1	2	11/1	7/1	36	...	...
St. Joseph's Hospital	Baltimore		1,309	42	Yes	None	2	2	12/1	7/1	24	29	19
Sinai Hospital	Baltimore	A. Ullman	1,196	38	Yes	$47	1	4	1/1	7/1	48	38	10

Numerical and other references will be found on page 707.

V 10
1937

SURGERY—(Continued)		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Apply Before	Service Begins	Available Training (Months)	Deaths	Autopsies
South Baltimore General Hospital	Baltimore	C. W. Maxson	1,225	44	Yes	$30	1	2	12/15	7/1	12	52	30
Union Memorial Hospital	Baltimore		4,443	21	Yes	$12	1	5	1/1	7/1	36	...	...
University Hospital	Baltimore	A. M. Shipley	2,758	47	Yes	None	1	2	12/1	7/1	24	206	70
West Baltimore General Hospital	Baltimore	B. M. Bernheim	700	33	No	$20	1	2	1/1	7/1	24	44	11
Beth Israel Hospital	Boston	C. G. Mixter	2,270	39	Yes	$40	1	1	7/1	1/1	24	91	35
Boston City Hospital [7]	Boston		11,070	94	Yes	*	6	0	Any time	Varies	12	381	87
Children's Hospital	Boston	W. E. Ladd	1,124	2	Yes	$50	1	1	Any time	Varies	12	50	47
Massachusetts General Hospital	Boston	A. W. Allen and E. D. Churchill	4,208	48	Yes	$42	1	4	Any time	1/1&7/1	24	...	...
Massachusetts Memorial Hospitals	Boston	H. M. Clute	3,824	27	Yes	$01	1	1	1/1	7/1	24	71	...
Peter Bent Brigham Hospital	Boston	E. C. Cutler	2,266	57	Yes	$42	1	4	Any time	Varies	60	...	...
Cambridge Hospital	Cambridge, Mass.		.....	21	Yes	$62	1	0	1/1	7/1	12	...	...
Truesdale Hospital	Fall River, Mass.	F. E. Truesdale	1,600	20	Yes	None	2	0	1/1	7/1	12	94	29
Memorial Hospital	Worcester, Mass.	W. C. Seelye and B. H. Alton	2,181	5	Yes	$100	1	0	4/1	9/1	24	52	30
University Hospital	Ann Arbor, Mich.	F. A. Coller	3,582	79	Yes	$27	12	0	12/1	7/1	48	189	95
Alexander Blain Hospital	Detroit	A. W. Blain	880	2	Yes	$75	3	0	1/1	7/1	12	...	...
City of Detroit Receiving Hospital	Detroit	H. K. Shawan and C. F. Vale	4,718	100	Yes	$25	1	5	3/1	7/15	36	...	...
Grace Hospital	Detroit	R. J. Palmer	3,785	31	Yes	$40	1	1	4/1	9/1	24	213	37
Harper Hospital	Detroit	C. D. Brooks	8,021	11	Yes	$25	1	6	2/1	7/1	36	...	...
Henry Ford Hospital	Detroit	R. D. McClure	.....	...	Yes	$110	1	20	1/1	9/1	60	66	38
Providence Hospital	Detroit		5,495	12	No	$100	1	0	12/1	7/1	12	131	...
Eloise Hospital (Dr. Wm. J. Seymour Hospital)	Eloise, Mich.		.....	100	Yes	$37	1	3	3/1	7/1	48	128	59
Hurley Hospital	Flint, Mich.	R. S. Morrish	.....	60	No	$100	1	0	1/1	7/1	12	...	...
Minneapolis General Hospital [1]	Minneapolis	A. A. Zierold	1,295	100	Yes	$25	1	6	1/1&7/1	1/1&7/1	42	75	27
University Hospitals [8]	Minneapolis	O. H. Wangensteen	2,319	16	Yes	$70	3	3	1/1	7/1	36	93	70
Ancker Hospital	St. Paul	A. R. Colvin	2,300	98	Yes	$30	1	1	3/1	7/1	24	116	83
St. Louis County Hospital	Clayton, Mo.	C. F. Sherwin	855	98	Yes	$100	1	0	3/1	7/1	12	64	38
St. Mary's Hospital	Kansas City, Mo.		1,340	16	No	$50	1	0	1/1	7/1	12	50	38
Barnes Hospital	St. Louis	E. A. Graham	3,364	17	Yes	$25	1	7	12/1	7/1	36	205	131
Jewish Hospital	St. Louis	M. W. Myer	1,108	31	No	$42	1	1	12/1	7/1	24	55	32
St. Louis City Hospital	St. Louis		2,805	100	Yes	$75	3	7	12/1	7/1	24	...	...
St. Louis City Hospital No. 2 (col.)	St. Louis	J. W. Stewart	2,051	100	Yes	$100	1	4	7/1	7/1	24	111	...
St. Luke's Hospital	St. Louis	E. V. M. Mastin	872	14	Yes	$50	1	1	12/1	7/1	24	75	27
St. Mary's Group of Hospitals	St. Louis	W. T. Coughlin	2,278	49	Yes	$25	1	6	3/15	7/1	24	118	43
Cooper Hospital	Camden, N. J.	F. M. Merray	1,658	48	No	$100	1	0	....	12/1	36	128	...
Jersey City Hospital	Jersey City, N. J.	E. Burke	4,252	80	Yes	$150	1	1	3/1	10/1	24	256	24
Burlington County Hospital	Mount Holly, N. J.	W. E. Lee and T. J. Summey	502	33	Yes	$30	1	0	2/1	7/1	12	45	21
Albany Hospital	Albany, N. Y.	J. L. Donhauser	2,984	60	Yes	$15	1	4	12/15	7/1	48	98	73
Cumberland Hospital	Brooklyn	M. N. Foote	3,984	100	Yes	$70	1	1	3/1	7/1	24	100	32
Kings County Hospital	Brooklyn	E. H. Fiske	13,968	100	Yes	$100	6	0	6/1&11/1	1/1&7/1	12	673	107
Long Island College Hospital	Brooklyn	E. Goetsch	2,050	100	Yes	$22	1	3	1/1	7/1	24	81	15
Norwegian Lutheran Deaconesses' Home and Hospital	Brooklyn		1,676	12	Yes	None	1	0	1/1	7/1	12	...	...
Buffalo City Hospital [2]	Buffalo	M. Clinton	1,711	67	Yes	...	1	1	11/1	7/1	..	123	58
Buffalo General Hospital	Buffalo		3,646	10	Yes	$25	1	4	11/1	7/1	24	171	73
Millard Fillmore Hospital	Buffalo	G. R. Critchlow	1,600	22	Yes	$25	1	1	11/1	7/1	24	91	37
Clifton Springs Sanitarium and Clinic	Clifton Springs, N. Y.	A. S. Taylor	749	10	No	$25	1	0	1/1	7/1	36	23	12
Queens General Hospital	Jamaica, N. Y.	F. N. Dealy	2,823	100	Yes	$15	1	1	1/1	7/1	24	192	72
Charles S. Wilson Memorial Hospital	Johnson City, N. Y.	C. Whittemore	1,887	1	Yes	$75	1	0	12/1	7/1	36	36	39
Bellevue Hospital	New York City		10,108	100	Yes	$83	2	6	Any time	1/1&7/1	30	...	...
Flower-Fifth Avenue Hospital	New York City	C. A. Burrett	2,727	5	Yes	$40	1	1	12/1	7/1	24	129	22
Metropolitan Hospital	New York City	J. H. Pobes	1,781	100	Yes	$100	2	0	3/1	7/1	12	109	14
Montefiore Hosp. for Chronic Diseases	New York City	A. A. Berg	436	86	Yes	$70	1	2	1/1&7/1	1/1&7/1	12	196	139
Mount Sinai Hospital [10]	New York City		.....	0	Yes	$125	6	0	1/1&7/1	1/1&7/1	12	...	...
New York Hospital	New York City	G. J. Heuer	3,617	5	Yes	None	2	13	1/1	7/1	72	146	82
N.Y. Polyclinic Med. School and Hosp.	New York City		2,666	16	Yes	None	8	0	1/1&7/1	Quart.	24	85	11
N.Y. Post-Grad. Med. School and Hosp.	New York City	T. H. Russell	3,685	30	Yes	$30	2	4	1/1&7/1	1/1&7/1	24	120	32
New York Society for the Relief of the Ruptured and Crippled	New York City	C. G. Burdick	1,966	35	Yes	$20	3	0	Any time	Varies	12	45	18
Presbyterian Hospital	New York City	A. O. Whipple	2,270	30	Yes	$83	4	12	Any time	1/1&7/1	36	154	73
Genesee Hospital	Rochester, N. Y.	C. Sumner	1,450	1	Yes	$50	1	0	12/1	7/1	12	93	38
Rochester General Hospital	Rochester, N. Y.	H. L. Prince	3,613	60	Yes	$30	1	0	4/1	7/1	12	229	81
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	J. J. Morton	5,676	58	Yes	$42	1	5	1/1	7/1	48	194	136
Hospital of the Good Shepherd	Syracuse, N. Y.	A. G. Swift	3,721	2	No	$40	1	1	12/1	7/1	24	...	...
Grasslands Hospital	Valhalla, N. Y.	G. C. Adie	1,305	90	Yes	$75	1	2	4/1&10/1	1/1&7/1	36	71	52
Duke Hospital	Durham, N. C.	J. D. Hart	1,702	64	Yes	$42	1	5	1/1	7/1	48	102	56
Watts Hospital	Durham, N. C.	F. Roberson	2,477	23	Yes	$50	1	0	1/1	7/1	12	49	7
City Memorial Hospital	Winston-Salem, N. C.	A. de T. Valk	1,228	42	Yes	$30	2	0	1/1	7/1	12	65	30
City Hospital	Akron, O.		4,486	40	Yes	$25	1	3	1/1	7/1	36	158	86
St. Thomas Hospital	Akron, O.		1,630	36	No	$40	1	0	12/1	7/1	12	49	23
Mercy Hospital	Canton, O.	H. M. Schuffell	3,393	17	No	$100	1	0	12/1	7/1	12	81	19
Cincinnati General Hospital	Cincinnati	M. R. Reid	2,808	87	Yes	*	2	15	2/15	9/1	72	284	124
Deaconess Hospital	Cincinnati		1,089	5	Yes	$75	1	0	12/1	7/1	12	39	9
Good Samaritan Hospital	Cincinnati		5,823	5	No	$35	1	2	1/1	7/1	36	136	23
Jewish Hospital	Cincinnati	J. L. Ransohoff	1,685	20	Yes	$45	2	0	12/1	7/1	12	36	10
City Hospital	Cleveland	C. H. Lenhart	2,918	97	Yes	$37	1	12	1/1	1/1&7/1	36	196	...
Mount Sinai Hospital	Cleveland	M. E. Blahd	2,183	23	No	$75	2	0	12/1	7/1	12	73	21
St. Alexis Hospital	Cleveland		3,340	25	No	$60	1	2	12/1	7/1	24	107	13
St. John's Hospital	Cleveland	G. P. O'Malley	2,108	18	No	$25	1	1	12/1	7/1	24	40	6
St. Luke's Hospital	Cleveland	C. A. Bowers	2,347	18	Yes	$25	1	3	12/1	7/1	48	86	30
St. Vincent Charity Hospital	Cleveland	E. P. Neary	2,666	35	Yes	....	1	0	12/1	7/1	12	188	49
University Hospitals [3]	Cleveland	C. H. Lenhart	4,232	30	Yes	$35	4	4	1/1	7/1	36	180	113
Starling-Loving University Hospital	Columbus, O.	V. A. Dodd	2,656	55	Yes	$25	1	5	12/1	7/1	36	....	....
Miami Valley Hospital	Dayton, O.	[4]	4,704	28	No	$75	1	0	12/1	7/1	..	...	...
Huron Road Hospital	East Cleveland, O.	B. B. Kimmel	1,886	13	Yes	$50	1	0	1/1	7/1	12	...	20
St. Elizabeth's Hospital	Youngstown, O.	F. W. McNamara	2,648	30	No	$50	1	0	12/1	7/1	12	134	17
St. Anthony Hospital	Oklahoma City		4,722	10	No	$45	2	0	12/1	7/1	12	112	30
State University and Crippled Children's Hospitals	Oklahoma City	R. M. Howard	2,070	67	Yes	$30	1	0	1/1	7/1	12	135	79
Univ. of Oregon Med. School Hosps.	Portland	T. M. Joyce	1,455	100	Yes	$30	1	1	1/1	7/1	24	95	73

Numerical and other references will be found on page 707.

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Apply Before	Service Begins	Available Training (Months)	Deaths	Autopsies
SURGERY—(Continued)													
Abington Memorial Hospital	Abington, Pa.	D. B. Pfeiffer and W. M. Sylvis	1,458	22	Yes	None	1	0	1/1	7/1	12	92	23
St. Luke's Hospital	Bethlehem, Pa.	W. L. Estes, Jr.	2,504	35	No	$50	1	0	Any time	7/1	12	...	...
Geo. F. Geisinger Memorial Hospital	Danville, Pa.	H. L. Foss	1,335	23	Yes	$50	1	0	2/1	7/1	12	94	40
Germantown Dispensary and Hospital	Philadelphia	W. E. Lee and W. B. Swartley	1,600	17	Yes	$130	1	0	1/1	7/1	12	80	26
Graduate Hospital of the Univ. of Pa.	Philadelphia	W. E. Lee	1,922	36	Yes	None	2	0	1/1	7/1	12	111	32
Jewish Hospital	Philadelphia		2,565	32	No	None	1	0	3/1	6/15	12	134	68
Pennsylvania Hospital	Philadelphia	C. P. Mitchell and W. E. Lee	1,951	31	Yes	$42	2	0	Any time	1/1	12	92	31
Philadelphia General Hospital	Philadelphia		2,787	95	Yes	$100	1	0	7/1	7/1	12	...	...
Allegheny General Hospital	Pittsburgh	O. C. Gaub	1,582	55	No	$81	1	0	2/1	7/1	12	108	18
St. Francis Hospital	Pittsburgh		2,077	14	Yes	$50	1	0	11/1	7/1	12	...	...
Reading Hospital	Reading, Pa.		1,057	48	Yes	$83	1	0	1/1	7/1	12	117	69
Robert Packer Hospital	Sayre, Pa.	D. Guthrie	4,067	52	No	$75*	1	1	4/1	7/1	24	77	35
Roper Hospital	Charleston, S. C.	R. S. Cathcart	1,380	78	Yes	$40	1	2	1/1	7/1	36	81	19
Baroness Erlanger Hospital	Chattanooga, Tenn.		2,381	60	Yes	$50	1	0	3/1	7/1	12	...	...
John Gaston Hospital	Memphis, Tenn.	J. L. McGeehee	2,268	95	Yes	$32	2	0	1/1	7/1	12	231	21
Nashville General Hospital	Nashville, Tenn.		1,559	90	Yes	$35	1	1	12/1	7/1	24	116	39
Vanderbilt University Hospital	Nashville, Tenn.	R. Brooks	2,189	72	Yes	$35	1	4	2/15	7/1	24	101	54
Baylor University Hospital	Dallas, Tex.	C. W. Flynn	2,760	20	Yes	$65	1	1	4/1	7/1	24	75	19
John Sealy Hospital	Galveston, Tex.	A. O. Singleton	1,886	60	Yes	None	1	0	12/1	7/15	12	91	46
Norfolk General Hospital	Norfolk, Va.	C. C. Smith, Jr.	2,522	30	Yes	$50	1	0	1/1	7/1	12	...	...
Medical College of Va., Hosp. Division	Richmond	I. A. Bigger	3,122	23	Yes	$50	2	5	2/1	7/1	24	100	43
University of Virginia Hospital	University	E. P. Lehman	1,562	26	Yes	None	1	5	12/1	7/1	48	107	46
Charleston General Hospital	Charleston, W. Va.	J. Cannaday	3,504	10	Yes	$50	1	1	10/1	7/1	24	...	...
State of Wisconsin General Hospital	Madison	E. R. Schmidt	.....	88	Yes	$25	1	9	Any time	7/1	36	...	...
St. Joseph's Hospital	Milwaukee	F. A. Stratton	4,569	...	Yes	$40	1	0	1/1	7/1	12	112	28
Milwaukee County General Hospital	Wauwatosa, Wis.	F. B. McMahon	5,253	100	Yes	$160	1	2	5/1	7/16	24	74	56
THORACIC SURGERY													
San Francisco Hospital	San Francisco		.....	100	....	$50	1	0	2/1	7/1	12	...	...
Norwich State Tuberculosis Sanatorium (Uncas-on-Thames)	Norwich, Conn.	R. G. Urquhart	350	...	....	$148	1	0	Any time	7/1	24	4	1
Sea View Hospital	Staten Island, N. Y.	F. N. Corylios	438	100	....	$100	3	0	5/1&11/1	1/1&7/1	12	63	59
City Hospital	Cleveland	S. O. Freedlander	300	97	....	$75	1	0	1/1	7/1	12	...	...
TUBERCULOSIS													
Arroyo Sanatorium	Livermore, Calif.	H. C. Bush	220	100	Yes	$85	1	0	1/15	7/1	24	10	5
Barlow Sanatorium	Los Angeles	H. W. Bosworth	165	10	Yes	$100	1	0	Any time	Varies	12	5	5
Los Angeles County Hospital	Los Angeles		1,132	100	Yes	$175	2	0	6/1&12/1	1/1&7/1	36	305	115
Pottenger Sanatorium and Clinic	Monrovia, Calif.	F. M. Pottenger	683	5	Yes	$50	1	0	Any time	Varies	12	24	11
Olive View Sanatorium	Olive View, Calif.	E. S. Bennett	1,618	85	....	$75	6	0	Any time	Varies	12	80	35
San Francisco Hospital	San Francisco	E. Rosencrantz	787	100	Yes	$25	1	1	2/1	7/1	24	201	...
Santa Clara County Hospital	San Jose, Calif.	C. L. Ianne	168	100	Yes	$150	2	0	1/1	7/1	12	48	...
Fairmont Hospital of Alameda County	San Leandro, Calif.	H. G. Trimble	566	100	No	$100	1	0	12/1	7/1	12	110	56
Union Printers' Home and Tuberculosis Sanatorium	Colorado Springs	C. O. Giese	119	100	No	...	1	0	Any time	Varies	36	59	9
Denver General Hospital	Denver	W. N. Beggs	180	10	Yes	$50	3	0	Any time	1/1&7/1	...	46	...
National Jewish Hospital	Denver	C. J. Kaufman	412	100	Yes	$100	4	0	Any time	Varies	12	22	12
Sanatorium of the Jewish Consumptives' Relief Society	Spivak, Colo.	A. B. Raff	378	100	Yes	$100	5	0	Any time	Varies	36	23	6
Undercliff, Meriden State Tuberculosis Sanatorium [10]	Meriden, Conn.	C. B. Gibson	170	85	Yes	$100	3	0	Any time	7/1	12	13	3
Norwich State Tuberculosis Sanatorium (Uncas-on-Thames)	Norwich, Conn.	H. B. Campbell	1,359	...	Yes	$148	1	0	Any time	Varies	36	75	23
City of Chicago Municipal Tuberculosis Sanitarium	Chicago	K. J. Henriksen	1,728	100	No	....	1	0	Any time	Varies	36	328	179
Macon County Tuberculosis Sanat.	Decatur, Ill.	D. O. N. Lindberg	149	75	Yes	$100	1	0	1/1	7/1	12	1	0
Peoria Municipal Tuberculosis Sanat.	Peoria, Ill.	M. Pollak	239	100	Yes	$125	1	0	Any time	Varies	12	14	9
Rockford Municipal Tuberculosis Sanatorium	Rockford, Ill.	W. J. Bryan	122	100	No	$100	1	0	6/1	7/1	12	15	4
Roehne Tuberculosis Hospital	Evansville, Ind.	P. D. Crimm	695	32	Yes	$50	2	0	Any time	Varies	36	39	37
Indiana State Sanatorium	Rockville, Ind.	J. V. Pace	373	100	Yes	$50	1	0	Any time	Varies	36	9	0
Western Maine Sanatorium	Greenwood Mountain	L. Adams	325	...	Yes	$35	1	0	Any time	Varies	36	19	9
Baltimore City Hospitals	Baltimore	H. M. Stein	447	100	No	$16	1	1	1/1	7/1	24	152	96
Sanatorium Division of Boston City Hospital	Boston	J. A. Foley	581	100	No	$100	1	0	Any time	Varies	12	100	34
North Reading State Sanatorium [10]	North Wilmington	C. C. MacCorison	457	...	Yes	None	1	0	Any time	Varies	12	16	1
Rutland State Sanatorium	Rutland, Mass.	E. B. Emerson	369	...	Yes	$75	1	0	Any time	Varies	12	61	19
Plymouth County Hospital	South Hanson, Mass.	B. H. Peirce	204	...	Yes	$100	1	0	Any time	Varies	12	32	23
Middlesex County Sanatorium	Waltham, Mass.	S. H. Remick	479	...	Yes	$150	1	0	Any time	Varies	12	50	18
Belmont Hospital	Worcester, Mass.	R. Holmes	240	98	Yes	$125	1	1	Any time	Varies	24	45	28
University Hospital	Ann Arbor, Mich.	J. B. Barnwell	.....	79	Yes	$25	2	0	12/1	7/1	12	...	...
American Legion Hospital	Battle Creek, Mich.	W. L. Howard	359	100	No	$75	2	0	Any time	Varies	12	40	7
Herman Kiefer Hospital	Detroit	B. U. Estabrook	2,300	97	No	$150	10	0	1/1	7/1	12	273	37
Michigan State Sanatorium	Howell, Mich.	G. L. Leslie	709	100	Yes	$125	2	0	Any time	Varies	36	26	12
Morgan Heights Sanatorium	Marquette, Mich.	R. F. Berry	195	98	Yes	$125	1	0	1/1	7/1	12	18	3
Wm. H. Maybury Sanatorium	Northville, Mich.	H. S. Willis	1,374	100	No	$150	5	0	Any time	Varies	36	77	42
Oakland County Tuberculosis Sanat.	Pontiac, Mich.	G. A. Sherman	464	92	Yes	$150	2	0	3/1	7/1	12	46	17
Nopeming Sanatorium	Nopeming, Minn.	A. T. Laird	411	95	Yes	$100	1	0	1/1	7/1	12	50	17
Glen Lake Sanatorium	Oak Terrace, Minn.	F. S. Mariette	1,189	87	No	$90	1	0	2/1	7/1	12	118	70
City Isolation Hospital	St. Louis	H. J. Ulrich	148	98	No	$150	1	0	4/1	7/1	12	148	93
Mount St. Rose Sanatorium	St. Louis	L. C. Boisliniere	324	53	No	$125	1	0	3/1	7/1	12	40	28
Robert Koch Hospital	St. Louis	G. D. Kettelkamp	766	100	No	$150	5	0	3/1	7/1	12	94	46
New Jersey State Sanatorium	Glen Gardner	S. B. English	468	85	Yes	$83	4	0	Any time	Varies	36	5	2
Jersey City Hospital	Jersey City, N. J.	B. S. Pollak	492	90	Yes	$75	2	0	3/1	1/1	12	76	21
Hudson County Tuberculosis Hospital and Sanatorium	Secaucus, N. J.	B. S. Pollak	861	100	Yes	$160	5	0	Any time	Varies	36	88	59
U. S. Marine Hospital	Ft. Stanton, N. M.	R. E. Porter	* 355	100	Yes	$203	2	0	Any time	Varies	36	12	10
Albany Hospital	Albany, N. Y.	R. J. Erickson	391	60	Yes	$50	2	0	12/15	7/1	12	40	36
Montefiore Hosp. Country Sanatorium	Bedford Hills, N. Y.	A. Shamaskin	317	97	No	$100	3	0	1/1&7/1	1/1&7/1	12	2	0
Kings County Hospital	Brooklyn	C. E. Hamilton	1,321	100	Yes	$100	1	2	6/1&11/1	1/1&7/1	12	206	...
Buffalo City Hospital [9]	Buffalo	J. H. Donnelly	774	67	Yes	....	1	1	11/1	7/1	..	126	45
Loomis Sanatorium	Loomis, N. Y.	B. T. McMahon	162	5	No	$125	1	0	Any time	Varies	12	13	3

Numerical and other references will be found on page 707.

V 10
1937

	Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Service	Beginning Salary	Residents	Assistant Residents	Apply Before	Service Begins	Available Training (Months)	Deaths	Autopsies
TUBERCULOSIS—(Continued)												
Metropolitan Life Insurance Co. Sanat.	Mt. McGregor, N. Y.	W. H. Ordway	198	100	No	$100	2	0	Any time	Varies	12	2	1
Bellevue Hospital	New York City	J. A. Miller	2,259	100	Yes	$70	1	6	Any time	1/1&7/1	24	...	...
Lenox Hill Hospital	New York City	G. Thorburn	162	23	Yes	$50	1	0	1/1	7/1	12	14	3
Metropolitan Hospital	New York City	G. G. Ornstein	734	100	Yes	$100	6	0	3/1	7/1	12	310	26
Montefiore Hosp. for Chronic Diseases	New York City	H. Wessler	596	86	Yes	$50	3	0	1/1&7/1	1/1&7/1	12	106	70
Municipal Sanatorium	Otisville, N. Y.	A. Kane	953	58	No	$120	7	0	1/1&7/1	1/1&7/1	12	3	0
Iola-Monroe County Tuberculosis Sanatorium	Rochester, N. Y.	E. R. Bridge	562	56	Yes	$100	1	2	1/1	7/1	24	79	38
Sea View Hospital	Staten Island, N. Y.	G. G. Ornstein	3,625	100	No	$100	18	0	5/1&11/1	1/1&7/1	12	464	230
Trudeau Sanatorium	Trudeau, N. Y.	F. H. C. Heise	400	1	No	None	2	0	Any time	Varies	12	2	0
Grasslands Hospital	Valhalla, N. Y.	J. M. Nicklas	604	90	Yes	$117	4	0	Any time	Varies	24	55	35
Hamilton County Tuberculosis Sanat.	Cincinnati	H. K. Dunham	1,246	94	Yes	$150	3	0	7/1	7/1	12	173	78
City Hospital	Cleveland	J. C. Placak	947	97	Yes	$75	2	0	1/1	7/1	12	196	...
Ohio State Sanatorium	Mt. Vernon	F. C. Anderson	628	...	No	$141	1	0	Any time	Varies	15	0	0
Sunny Acres, Cleveland Tuberculosis Sanatorium	Warrensville, O.	R. H. Browning	889	100	Yes	$125	4	0	2/1	7/1	12	19	17
Eagleville Sanat. for Consumptives	Eagleville, Pa.	A. J. Cohen	340	50	No	$125	2	0	Any time	Varies	36	15	5
Philadelphia General Hospital	Philadelphia		1,960	95	Yes	$100	1	0	7/1	7/1	12	...	...
White Haven Sanatorium	White Haven, Pa.	F. A. Craig	615	6	No	$50	4	0	Any time	Varies	12	72	24
State Sanatorium	Wallum Lake, R. I.		723	66	Yes	$150	4	0	Any time	Varies	12	84	42
Pine Breeze Sanatorium	Chattanooga, Tenn.	J. L. Hamilton	441	50	Yes	$125	1	0	1/1	1/1	12	60	11
Davidson County Tuberculosis Hosp.	Nashville, Tenn.	R. R. Crowe	146	80	Yes	$150	1	0	4/1	7/1	12	53	11
Hopemont Sanitarium	Hopemont, W. Va.	A. V. Cadden	668	...	Yes	$165	4	0	Any time	Varies	36	51	19
Wisconsin State Sanatorium	Statesan	H. M. Coon	192	98	No	$135	3	0	Any time	Varies	36	24	9
UROLOGY													
Hillman Hospital	Birmingham, Ala.	W. F. Scott	506	100	Yes	$40	1	0	1/15	7/1	12	38	11
Los Angeles County Hospital	Los Angeles		2,544	100	Yes	$10	1	3	6/1&12/1	1/1&7/1	36	160	81
San Francisco Hospital [1]	San Francisco	C. M. Johnson	595	100	No	....	1	..	2/15	7/1	12	32	...
Stanford University Hospitals	San Francisco	J. R. Dillon	502	4	Yes	$25	1	0	1/1	7/1	12	20	11
University of California Hospital	San Francisco	J. Hinman	527	...	Yes	$50	1	0	2/15	7/1	12	12	7
New Haven Hospital	New Haven, Conn.	C. L. Deming	....	43	Yes	....	1	1	12/15	7/1	12	24	10
Gallinger Municipal Hospital	Washington, D. C.	T. C. Thompson	267	100	No	$30	1	0	1/1	7/1	12	26	13
Grady Hospital	Atlanta, Ga.		561	100	Yes	$40	2	0	1/1	7/1	12	46	7
University of Chicago Clinics	Chicago	C. B. Huggins	....	17	Yes	$25	1	0	1/1	7/1	12	9	6
Indianapolis City Hospital	Indianapolis		397	20	Yes	$20	1	0	4/1	7/1	12	37	16
University Hospitals	Iowa City	N. G. Alcock	1,341	87	Yes	*	1	2	1/1	7/1	36	116	65
Charity Hospital	New Orleans		3,829	100	Yes	$12	1	1	7/1	7/1	24	148	59
Touro Infirmary	New Orleans		....	32	Yes	$25	1	0	1/1	7/1	12	...	...
Johns Hopkins Hospital	Baltimore	H. H. Young	663	99	Yes	....	2	3	4/1	9/1	12	38	...
Beth Israel Hospital	Boston	H. H. Crabtree	310	39	Yes	$40	1	0	1/1	7/1	24	...	...
Boston City Hospital	Boston	H. H. Howard and A. Riley	490	94	Yes	*	1	0	Any time	1/1	12	41	7
Massachusetts General Hospital	Boston	J. D. Barney	526	48	Yes	$42	1	2	Any time	12/1	24	...	...
University Hospital	Ann Arbor, Mich.	R. M. Nesbit	1,118	79	Yes	$100	1	2	12/1	7/1	36	64	37
Battle Creek Sanitarium	Battle Creek, Mich.	W. F. Martin	1,367	0	No	$125	1	0	4/1	7/1	12	9	1
City of Detroit Receiving Hospital [4]	Detroit	W. E. Keane and E. G. Martin	1,199	100	Yes	$83	1	1	3/1	7/15	24	...	...
Henry Ford Hospital	Detroit	J. K. Ormond	....	..	Yes	$110	1	1	1/1	9/1	36	7	4
Eloise Hospital (Dr. Wm. J. Seymour Hospital)	Eloise, Mich.	W. L. Sherman	3,773	100	Yes	$37	1	1	3/1	7/1	24	41	19
Ancker Hospital [20]	St. Paul	F. E. B. Foley	606	50	Yes	$50	1	0	3/1	7/1	12	44	30
St. Louis City Hospital	St. Louis		779	100	Yes	$100	1	0	12/1	7/1	12	...	...
Bayonne Hospital and Dispensary [21]	Bayonne, N. J.	S. R. Woodruff	274	75	Yes	None	1	0	1/1&7/1	1/1&7/1	..	9	3
Jersey City Hospital	Jersey City, N. J.	E. J. Daly	1,112	80	Yes	$75	1	0	3/1	7/1	12	63	3
Newark City Hospital	Newark, N. J.	C. R. O'Crowley	730	100	Yes	$20	0	0	7/1	7/1	12	...	...
Kings County Hospital	Brooklyn	C. S. Cochrane	1,615	90	Yes	None	1	1	6/1&11/1	1/1&7/1	12	190	23
Long Island College Hospital	Brooklyn	F. L. Senger, Jr.	372	20	Yes	$22	1	1	1/1	7/1	24	17	1
Buffalo City Hospital [2]	Buffalo	E. M. Watson	258	67	Yes	....	1	1	11/1	7/1	..	35	12
Buffalo General Hospital	Buffalo	T. M. Parmenter	529	10	Yes	$25	1	0	11/1	7/1	12	34	13
Queen's General Hospital [22]	Jamaica, N. Y.	F. G. Riley and R. Boenke	570	100	Yes	$15	1	1	1/1	7/1	24	47	26
Bellevue Hospital	New York City	A. R. Stevens	1,484	100	Yes	$15	1	2	Any time	1/1&7/1	24	...	...
Morrisania City Hospital	New York City	T. M. Townsend	726	100	Yes	$15	2	1	1/1&7/1	1/1&7/1	18	33	12
New York Hospital	New York City	E. L. Keyes	702	5	Yes	None	1	3	1/1	7/1	60	...	...
N.Y. Post-Grad. Med. School and Hosp.	New York City	J. F. McCarthy	389	20	Yes	None	1	0	3/1	10/1	36	21	4
Presbyterian Hospital	New York City	J. B. Squier	1,248	30	Yes	$42	1	4	Any time	7/1	36	62	16
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	W. W. Scott	465	58	Yes	$42	1	1	1/1	7/1	24	...	...
Sea View Hospital [22]	Staten Island, N. Y.	A. J. Greenberger and O. L. A. Levin	891	100	....	$100	1	0	5/1&11/1	1/1&7/1	12	13	5
Duke Hospital	Durham, N. C.	E. P. Alyea	668	64	Yes	$42	1	1	1/1	7/1	36	20	9
City Hospital	Cleveland	H. R. Trattner	....	97	Yes	$50	0	0	1/1	7/1	12	...	...
University Hospitals	Cleveland	J. J. Jocleson	653	30	Yes	$35	1	0	1/1	7/1	12	23	...
Starling-Loving University Hospital	Columbus, O.	W. N. Taylor	330	55	Yes	$25	1	1	12/1	7/1	24	...	...
Graduate Hospital of the Univ. of Pa.	Philadelphia	J. C. Birdsall	165	36	Yes	None	1	0	1/1	7/1	12	7	2
Hospital of the Univ. of Pennsylvania	Philadelphia	A. Randall	573	31	Yes	$100	1	0	1/1	9/1	24	17	10
Pennsylvania Hospital	Philadelphia	Leon Herman	982	31	Yes	$25	1	0	Any time	7/1	12	12	6
Presbyterian Hospital	Philadelphia	J. C. Birdsall	238	19	Yes	None	1	0	3/1	7/1	12	16	10
Mercy Hospital [3]	Pittsburgh	E. J. McCague	347	35	Yes	....	1	0	12/1	7/1	12	...	...
University of Virginia Hospital	University	J. H. Neff	536	36	Yes	None	1	1	12/1	7/1	24	23	16
State of Wisconsin General Hospital	Madison	I. R. Sisk	....	88	Yes	$25	1	2	Any time	7/1	36	...	...
Milwaukee County General Hospital	Wauwatosa, Wis.	R. E. Stockinger	448	100	Yes	$100	1	0	5/1	7/16	12	26	21

a. Compensation arranged by medical school and hospital.
b. Autopsy statistics for six months only.
c. In lieu of maintenance.
d. Twenty nine-month appointments begin at no salary. Assistant residents receive an allowance.
e. Hospital facilities by affiliation.
1. Fellowships available.
2. Appointments are from 36 to 60 months including 12 to 18 months' internship. Salary paid in lieu of maintenance.
3. General experience available in hospitals requiring previous approved internship. Same credit assigned as to senior interns and general residents in hospitals approved for internship.
4. Includes proctology.
5. One medical and one surgical appointment.
6. Dental as well as medical degree required.
7. Research appointments available in medicine and surgery.
8. Includes obstetrics.
9. Includes neurosurgery.
10. Not a hospital; outpatient and home delivery service.
11. Training includes two years of service at City of Detroit Receiving Hospital in gynecology and two years at Herman Kiefer Hospital in obstetrics.
12. Orthopedic resident covers eye, ear, nose and throat service.
13. Apply to chief of service for information about affiliating hospitals.
14. Three assistant residents serve six months in obstetrics.
15. Separate appointments in roentgenology and in radiation therapy.
16. Training in radiation therapy only.
17. Several services include obstetrics-gynecology.
18. Private and semi-private pavilions.
19. Admissions are confined to children.
20. No applications received.
21. Affiliating; usually with N. Y. Post-Graduate Medical School, New York City.
22. Includes dermatology

APPROVED SCHOOLS FOR PHYSICAL THERAPY TECHNICIANS

The cooperation of the Council on Physical Therapy, the American Congress of Physical Therapy and the American Physiotherapy Association was secured in determining minimum educational requirements for physical therapy technicians. "Essentials of an Acceptable School for Physical Therapy Technicians" were adopted by the Council on Medical Education and Hospitals and passed by the House of Delegates of the American Medical Association at the Kansas City meeting, May 9, 1936, as a result of the resolution introduced by Dr. C. B. Reed of Illinois. The first list of approved schools appeared in THE JOURNAL, Aug. 29, 1936, and the schools listed here represent the first revision.

As for other types of medical assistants, there exist many commercial schools for physical therapy technicians throughout the country. Although they are self styled as schools of physical therapy, instruction given in courses of this type consists principally of concentrated massage training. Extensive advertising is used to secure students who are not aware that standards and a registry exist and that short courses are not as a general rule considered acceptable to hospitals and clinics employing technicians. Naturally, such schools are primarily interested in revenues and as a rule do not adhere to standard requirements for admission and curriculum. Students turned out by commercial schools find their field of employment limited to massage establishments, clubs, gymnasiums, and so on; positions as assistants in hospital physical therapy departments or with members of the medical profession are virtually closed to them.

It has become increasingly apparent that many trained as "physical therapy technicians" in commercial schools

Schools for Physical Therapy Technicians Conforming to the Standard Adopted by the American Medical Association in 1936

Name and Location of School	Direction	Entrance Requirement	Length of Course	Student Capacity	Tuition	Certificate, Diploma, Degree
Childrens Hospital, Los Angeles [1]	John C. Wilson, M.D.	(a) R.N. (b) Grad. phys. ed.	12 mos.	10	$125	Diploma
Stanford University Hospitals, San Francisco	W. H. Northway, M.D.	(a) R.N. (b) Grad. phys. ed.	12 mos.	..	$175-$250	Certificate
Walter Reed General Hospital, Washington, D. C.[2]	Maj. W. W. McCaw, M.D.	Grad. phys. ed.	12 mos.	10	None	Certificate
Northwestern University Medical School, Chicago [3]	John S. Coulter, M.D.	(a) R.N. (b) Grad. phys. ed. (c) 3 yrs. coll.[a]	9 mos.	7	$200	Certificate
Bouvé-Boston School of Physical Education, Boston [4 b]	Howard Moore, M.D.	High school grad.	3 and 4 yrs.	6	$400 yr.	Diploma or B.S.
Harvard Medical School, Course 445, Boston [5]	F. R. Ober, M.D.	(a) R.N. (b) Grad. phys. ed. (c) Coll. grad.	9 mos.	16	$150	Certificate
Boston University, Sargent College of Physical Education, Cambridge, Mass.[6]	Prof. E. Hermann, Dean	High school grad.	4 yrs.	25	Univ. fees	B.S.
Battle Creek College, Battle Creek, Mich.[7]	Paul Roth, M.D.	(a) R.N. (b) 2 yrs. coll. (c) Grad. phys. ed.	12 mos.	..	$250	Certificate or B.S.
St. Louis University School of Nursing, St. Louis [8]	A. J. Kotkis, M.D.	High school grad.	4 yrs.	7	Univ. fees	B.S.
University of Buffalo, Buffalo [9]	G. G. Martin, M.D.	R.N.	18 mos.	2	Univ. fees	B.S.
Hospital for Ruptured and Crippled, New York City [10]	K. G. Hansson, M.D.	(a) R.N. (b) Grad. phys. ed.	9 mos.	8	$300	Certificate
D. T. Watson School of Physiotherapy, Leetsdale, Pa. (affiliated with Univ. of Pittsburgh School of Medicine)[11]	Jessie Wright, M.D.	(a) Grad. phys. ed. (b) 2 yrs. premed.	22 mos.	8	None	Diploma
College of William and Mary, Richmond, Va.[12]	Committee on Physical Therapy	(a) R.N. (b) Grad. phys. ed.	9 mos.	..	Coll. fee	Certificate
University of Wisconsin, Madison [13 c]	E. A. Pohle, M.D.	(a) R.N. (b) Grad. phys. ed.	12 mos	20	Univ. fee	Certificate

NOTES

a. Including 26 semester hours of the following subjects: physics, chemistry, zoology and biology.
b. Four-year course leads to B.S. degree from Simmons College.
c. M.S. degree for advanced work.

AFFILIATED CLINICAL FACILITIES

1. Glendale Sanitarium and Hospital, Glendale; Good Hope Clinic and Los Angeles County Hospital, Los Angeles.
2. Weightmann School for Crippled Children, Washington, D. C.
3. Michael Reese Hospital, Montgomery Ward Clinic, Passavant Memorial Hospital and St. Luke's Hospital, Chicago.
4. Boston City Hospital, Children's Hospital, Massachusetts General Hospital and Robert Breck Brigham Hospital, Boston; Cambridge Hospital, Cambridge, and Newton Hospital, Newton.
5. Boston Home for Incurables, Convalescent Home of the Children's Hospital, Children's Hospital, Harvard Infantile Paralysis Commission Clinic, Industrial School for Crippled and Deformed Children, Massachusetts General Hospital, Perkins Institute for the Blind, Peter Bent Brigham Hospital and Robert Breck Brigham Hospital, Boston, and Cambridge Hospital, Cambridge.
6. Industrial School for Crippled and Deformed Children, Massachusetts General Hospital, Massachusetts Memorial Hospitals, and Perkins Institute for the Blind, Boston, and Cambridge Hospital, Cambridge.
7. Ann J. Kellogg School, Battle Creek Sanitarium, and other hospitals in Battle Creek.
8. Firmin Desloge Hospital, St. Louis.
9. Buffalo City Hospital, Buffalo.
10. French Hospital, New York Polyclinic Hospital and Reconstruction Hospital, New York City.
11. Allegheny General Hospital, Children's Hospital, Elizabeth Steel Magee Hospital, Falk Clinic, Industrial Home for Crippled Children, and St. Francis Hospital, Pittsburgh.
12. Stuart Circle Hospital and Wheeldon Clinic, Richmond, and others.
13. State of Wisconsin General Hospital, Madison.

infringe on medical practice and too often are not prosecuted. Those trained in acceptable schools become thoroughly imbued with the necessity of working under the supervision of a qualified physician at all times and thus they become bona fide medical technicians.

The Council's essentials have been prepared with the purpose of designating acceptable basic courses covering all the more important phases of physical therapy. The essentials were printed in THE JOURNAL, Aug. 29, 1936, and may be secured through the office of the Council. Additional schools will be considered on application and placed on the list when they are found to comply with the requirements.

The American Registry of Physical Therapy Technicians, sponsored by the American Congress of Physical Therapy, accepts for examination graduates of schools approved by the Council on Medical Education and Hospitals. Information regarding the Registry may be secured through Miss Marion G. Smith, registrar, 30 North Michigan Avenue, Chicago.

APPROVED SCHOOLS FOR CLINICAL LABORATORY TECHNICIANS

The accompanying list of schools for clinical laboratory technicians represents the first revision made since the House of Delegates of the American Medical Association adopted standards for such schools in 1936.

Since 1928 the American Society of Clinical Pathologists has concerned itself with the promotion of standards for clinical laboratory technicians through its Board of Registry. Because of the need for inspection of these schools in order to secure more complete and accurate data as to the organization, faculty, clinical facilities, and so on, the Board requested the cooperation of the Council in this work. As a result of the adoption of "Essentials of an Acceptable School for Clinical Laboratory Technicians" by the Association, the first list of approved schools was published in THE JOURNAL, Aug. 29, 1936.

Up to the present time 210 schools have been inspected by the Council's staff. The great majority of these courses are conducted in the departments of clinical pathology of the larger hospitals. Small groups of students, varying from two to six, are the rule. An increasing number of colleges and universities are offering this type of training. Basic sciences and the regular academic requirements occupy the first three years; the fourth year is given over to instruction and practice training in hospital laboratories affiliated with the educational institution. This training, as a rule, leads to a degree of Bachelor of Science in Medical Technology.

Whether the hospital laboratory training follows one or more years of regular college work, it should represent training where the theoretical and practical knowledge are combined. Here the student must be shown, not merely told, how things are done. The practical training should not be a by-product of the hospital laboratory service as has frequently been the method in the past, but it should take its place along with the other important educational functions of the hospital. Since the nature of the training during this year is essentially that of an apprenticeship, it should assume the relationship existing between instructor and pupil. Training in clinical laboratory technic must of necessity, to have practical value, be coordinated and carefully directed to assure the student of a working knowledge of the fundamental principles and procedures. We should therefore strive to prevent the present tendencies toward uncontrolled education of laboratory workers in short courses offered by advertising schools.

Commercial schools, while they are comparatively few in number, persist in turning out large numbers of technicians in short courses. For the most part these schools are primarily interested in money-making and naturally do not adhere to high standards of admission and training. While it is conceivable that a short course of training might fit a young woman to do the simple routine laboratory examinations, such courses will not prepare the technician to occupy a responsible position in a hospital laboratory, private laboratory, clinic or research department, where she would be called on to perform a wide variety of examinations in the various phases of clinical pathology. Training in commercial courses will not permit students to enter the examinations of the Board of Registry of the American Society of Clinical Pathologists. Those entering commercial school courses should realize fully that they cannot be certified according to the accepted standards and that the possibilities of securing desirable employment are not great.

The Council's essentials have been drawn up for the purpose of designating acceptable courses of basic training covering all the more important phases of clinical laboratory work. Courses offered in certain phases of the work, such as bacteriology or histology, have therefore not been listed under this scheme. A number of hospital laboratory departments provide such concentrated training, which in itself may be considered high grade; however, the Council is of the opinion that the broad basic training should precede such specialized experience.

Many hospitals now require their clinical laboratory technicians to be registered or eligible for registration. In its approval of hospitals, the Council has not insisted that only registered technicians be employed. It does, however, require that the laboratory department have a competent, well qualified staff. Registration is one of the important methods of identifying those who are qualified.

The Board of Registry has cooperated closely with the Council on Medical Education and Hospitals in the interchange of information and opinions concerning schools under consideration for approval. The Council is organized to maintain continuous contact with the approved schools through its annual survey of hospitals and system of periodic inspections, and an annual check of all the approved schools is made before revisions of the list are printed.

The following list contains the names of 125 schools for clinical laboratory technicians which have been carefully investigated and found to conform to the minimum requirements adopted by the House of Delegates at Kansas City, May 11-15, 1936.

"Essentials of an Acceptable School for Clinical Laboratory Technicians" are printed in THE JOURNAL, Aug. 29, 1936, page 682, and copies may be secured through the office of the Council. Additional schools will be approved as they make application and are found to conform.

	Name and Location of School	Direction	Entrance Requirement	Hospital Bed Capacity	Yearly Admissions	Duration of Course	Number of Students	Tuition	Certificate Diploma Degree	
	ARKANSAS									
1	University of Arkansas (Little Rock City Hospital), Little Rock [1]	H. S. Thatcher, M.D.	2 yrs. coll.	100	1,700	12 mos.	4	$100	Certificate	1
	CALIFORNIA									
2	Children's Hospital, Los Angeles [2]	C. M. Hyland, M.D.	Coll. grad.	193	4,134	12 mos.	3	None	None	2
3	College of Medical Evangelists (White Memorial Hospital), Los Angeles	O. B. Pratt, M.D.	1 yr. coll.	162	3,866	12 mos.	6	$100	Certificate	3
4	Los Angeles County Hospital, Los Angeles	N. G. Evans, M.D.	Coll. degree	3,162	53,966	15 mos.	8	$50 yr.	Certificate	4
5	Huntington Memorial Hospital, Pasadena	A. G. Foord, M.D.	3 yrs. coll.	176	5,155	12 mos.	3	None	Certificate	5
6	Mary's Help Hospital, San Francisco	Z. E. Bolin, M.D.	2 yrs. coll.	118	3,975	18 mos.	3	None	None	6
7	University of California Hospital, San Francisco	I. C. Schumacher, M.D.	2 yrs. coll.	264	6,362	16 mos.	4	None	None	7
	COLORADO									
8	Children's Hospital, Denver	E. I. Dobos, M.D.	1 yr. coll.	135	3,319	12 mos.	2	None	Certificate	8
9	University of Denver, Denver [3]	Philip Hillkowitz, M.D.	High sch. grad.	...	.....	4 yrs.	30	$225 yr.	B.S.	9
	GEORGIA									
10	Emory University, Emory University [4]	R. R. Kracke, M.D.	Coll. degree	...	.....	18 mos.	8	$225 yr.	M.S.	10
	ILLINOIS									
11	Michael Reese Hospital, Chicago	K. M. Howell, M.D.	2 yrs. coll.	557	17,052	12 mos.	12	$100	Certificate	11
12	Mt. Sinai Hospital, Chicago	I. Davidsohn, M.D.	2 yrs. coll.	163	6,030	18 mos.	5	$125	Diploma	12
13	Northwestern University (Passavant Memorial Hospital), Chicago	H. L. Alt, M.D.	2 yrs. coll.	177	4,240	12 mos.	8	$50	Certificate	13
14	Evanston Hospital, Evanston	E. L. Benjamin, M.D.	B.S. or B.A.	228	6,574	12 mos.	4	$100	.....	14
15	St. John's Hospital, Springfield [5]	F. W. Light, M.D.	R.N. or 2 yrs. coll.	553	10,952	12 mos.	4	$50	None	15
16	St. Therese's Hospital, Waukegan	Ernest Pribram, M.D.	2 yrs. coll.	135	2,377	12 mos.	2	$50	Diploma	16
	INDIANA									
17	Indianapolis City Hospital, Indianapolis	H. C. Thornton, M.D.	2 yrs. coll.	538	10,131	12 mos.	1	$50	None	17
18	Indiana University School of Medicine (Indiana University Hospitals), Indianapolis	C. G. Culbertson, M.D.	B.S. or B.A.	406	9,423	12 mos.	4	None	Certificate	18
19	Methodist Episcopal Hospital, Indianapolis	H. M. Banks, M.D.	Coll. degree	500	19,505	24 mos.	5	None	Certificate	19
20	South Bend Medical Laboratory, South Bend [6]	A. S. Giordano, M.D.	2 yrs. coll.	...	.....	18 mos.	2	$125 yr.	None	20
	KANSAS									
21	Bethany Methodist Hospital, Kansas City	W. W. Summerville, M.D.	B.S. or B.A.	120	3,152	12 mos.	3	None	Certificate	21
22	University of Kansas Hospitals, Kansas City	C. G. Leitch, M.D.	Coll. grad.	297	5,658	12 mos.	5	None	None	22
23	St. Francis Hospital, Wichita	C. A. Hellwig, M.D.	R.N. or 1 yr. coll.	275	5,698	12 mos.	6	$150	Diploma	23
	KENTUCKY									
24	St. Joseph's Hospital, Lexington [7]	E. S. Maxwell, M.D.	2 yrs. coll.	198	6,364	12 mos.	4	$150	Certificate	24
25	University of Kentucky, Lexington [8]	M. Scherago, D.V.M.	High sch. grad.	...	.....	4 yrs.	13	Univ. fees	B.S.	25
26	St. Joseph Infirmary, Louisville	H. M. Weeter, M.D.	1 yr. coll.	320	6,132	12 mos.	2	$150	None	26
27	State Board of Health, Louisville [9]	L. H. South, M.D.	1 yr. coll.	...	.....	12 mos.	10	$400	Diploma	27
	LOUISIANA									
28	Loyola University, New Orleans [10]	J. G. Arnold, Jr., Ph.D.	High sch. grad.	...	.....	4 yrs.	16	Univ. fees	B.S.	28
	MAINE									
29	Central Maine General Hospital, Lewiston	Julius Gottlieb, M.D.	B.S.	182	3,705	12 mos.	1	None	None	29
	MARYLAND									
30	Mercy Hospital, Baltimore	H. T. Collenberg, M.D.	1 yr. coll.	255	5,992	18 mos.	20	$150	Certificate	30
	MASSACHUSETTS									
31	Simmons College (Faulkner Hospital), Boston [11] [a]	C. M. Hilliard, A.B.	High sch. grad.	144	3,743	4 yrs.	..	Coll. fees	B.S.	31
32	Mercy Hospital, Springfield	J. E. Dwyer, M.D.	1 yr. coll.	315	6,659	12 mos.	5	None	Certificate	32
33	Worcester City Hospital, Worcester	R. H. Goodale, M.D.	2 yrs. coll.	480	9,240	12 mos.	6	None	Certificate	33
34	Worcester Hahnemann Hospital, Worcester	William Freeman, M.D.	2 yrs. coll.	111	2,304	12 mos.	1	None	Certificate	34
35	Worcester State Hospital, Worcester [12]	J. M. Looney, M.D.	Coll. degree	2,240	815	12 mos.	2	None	Certificate	35
	MICHIGAN									
36	Leila Y. Post Montgomery Hospital, Battle Creek [13]	A. A. Humphrey, M.D.	2 yrs. coll.	158	2,973	12 mos.	2	None	None	36
37	Mercy Hospital, Bay City	W. G. Gamble, Jr., M.D.	R.N. or 2 yrs. coll.	140	4,237	12 mos.	2	$150	Certificate	37
38	City of Detroit Receiving Hospital (Wayne University), Detroit	O. A. Brines, M.D.	3 yrs. coll.	650	21,017	12 mos.	4	None	B.S.	38
39	Grace Hospital, Detroit	C. I. Owen, M.D.	2 yrs. coll.	408	13,629	12 mos.	6	$160	Diploma[b]	39
40	Henry Ford Hospital (Wayne University), Detroit	F. W. Hartman, M.D.	B.S. or B.A.	572	11,969	18 mos.	6	None	M.S	40
41	Providence Hospital, Detroit	J. E. Davis, M.D.	1 yr. coll.	309	11,967	12 mos.	4	None	Certificate	41
42	Wayne University, Detroit	(University course. Apply to registrar.)								42
43	William J. Seymour Hospital, Eloise	S. E. Gould, M.D.	Coll. degree	1,450	5,661	12 mos.	3	None	[b]	43

	MINNESOTA								
44	College of St. Scholastica (St. Mary's Hospital), Duluth	G. L. Berdez, M.D.	High sch. grad.	200	5,633	4 yrs.	4	Coll. fees	B.S.	44
45	St. Luke's Hospital, Duluth	A. H. Weiss, M.D.	2 yrs. coll.	217	5,744	16 mos.	4	None	.....	45
46	Fairview Hospital, Minneapolis	Loco Baker, M.D.	1 yr. coll.	200	3,886	12 mos.	2	$50	Certificate	46
47	Minneapolis General Hospital, Minneapolis [7]	N. H. Lufkin, M.D.	Coll. grad.	616	12,756	12 mos.	12	None	.....	47
48	Northwestern Hospital, Minneapolis	M. I. Smith, M.D.	1 yr. coll.	165	6,696	12 mos.	2	None	Diploma	48
49	Swedish Hospital, Minneapolis [8]	C. R. Drake, M.D.	2 yrs. coll.	225	5,696	24 mos.	8	$250	Certificate	49
50	University of Minnesota, Minneapolis [14]	W. A. O'Brien, M.D.	High sch. grad.	...	.....	4 yrs.	220	Univ. fees	B.S.	50
51	Charles T. Miller Hospital, St. Paul	Kano Ikeda, M.D.	2 yrs. coll.	200	5,617	12 mos.	6	$110	Certificate	51
	MISSISSIPPI									
52	Vicksburg Sanitarium and Crawford Street Hospital, Vicksburg [16]	L. S. Lippincott, M.D.	1 yr. coll.	75	1,906	24 mos.	4	None	Certificate	52
	MISSOURI									
53	University of Missouri, Columbia [16]	M. P. Neal, M.D.	*	...	.....	4 yrs.	..	Univ. fees	B.S.	53
54	Kansas City Health Department Laboratory, Kansas City [17]	R. E. Duncan, M.D.	1 yr. coll.	...	.....	18 mos.	11	None	Certificate	54
55	Menorah Hospital, Kansas City	R. Koritschoner, M.D.	Coll. degree	120	3,393	15 mos.	4	None	None	55
56	Research Hospital, Kansas City	F. C. Narr, M.D.	2 yrs. coll.	200	5,346	12 mos.	6	None	None	56
57	St. Joseph Hospital, Kansas City [9]	R. W. Kerr, M.D.	Coll. degree	210	4,789	24 mos.	9	None	Certificate	57
58	St. Luke's Hospital, Kansas City	F. C. Helwig, M.D.	2 yrs. coll.	193	4,545	16 mos.	9	$10	None	58
59	St. Mary's Hospital, Kansas City	C. G. Leitch, M.D.	Coll. grad.	156	4,468	12 mos.	5	$10	Certificate	59
60	St. Louis University School of Nursing (Firmin Desloge Hospital), St. Louis	A. E. Casey, M.D.	High sch. grad.	253	5,997	4 yrs.	18	Univ. fees	B.S.	60
	NEBRASKA									
61	Bryan Memorial Hospital, Lincoln	M. J. Breuer, M.D.	2 yrs. coll.	100	2,353	12 mos.	1	None	Certificate	61
62	Lincoln General Hospital, Lincoln	J. M. Neely, M.D.	2 yrs. coll.	147	2,971	12 mos.	2	$50	Certificate	62
63	University of Nebraska Hospital, Omaha	J. P. Tollman, M.D.	2 yrs. coll.	210	3,300	12 mos.	6	None	Certificate	63
	NEW YORK									
64	Bender Hygienic Laboratory, Albany [18]	J. J. Clemmer, M.D.	2 yrs. coll.	...	.....	14 mos.	7	$100	Certificate	64
65	Kilmer Pathological Laboratory (Binghamton City Hospital), Binghamton	V. W. Bergstrom, M.D.	R.N. or 1 yr. coll.	400	10,107	12 mos.	2	$50	Certificate	65
66	Jewish Hospital, Brooklyn	Max Lederer, M.D.	2 yrs. coll.	541	15,337	18 mos.	6	None	None	66
67	St. John's Hospital, Brooklyn	T. J. Curphey, M.D.	1 yr. coll.	204	4,068	18 mos.	3	$75	None	67
68	Buffalo City Hospital, Buffalo	S. L. Vaughan, M.D.	2 yrs. coll.	1,025	11,130	12-24 mos.	12	None	None	68
69	Buffalo General Hospital, Buffalo [19]	K. J. Terplan, M.D.	Coll. grad.	443	10,166	12-15 mos.	6	$50	None	69
70	St. Joseph's Hospital, Elmira	I. F. Bleyer, M.D.	1 yr. coll.	189	4,509	12 mos.	2	$75	Certificate	70
71	Rochester General Hospital, Rochester	I. A. Gáspár, M.D.	Coll. degree	307	8,744	18 mos.	4	None	Certificate	71
72	Ellis Hospital, Schenectady	E. Kellert, M.D.	R.N. or 1 yr. coll.	262	7,968	12 mos.	6	None	None	72
73	Russell Sage College (Samaritan Hospital), Troy	V. C. Jacobsen, M.D.	High sch. grad.	165	2,804	4 yrs.	4	Coll. fees	B.S.	73
	NORTH CAROLINA									
74	Duke Hospital, Durham	D. T. Smith, M.D.	2 yrs. coll.	400	10,750	16 mos.	10	$75	Certificate	74
	OHIO									
75	City Hospital, Akron	E. L. Saylor, M.D.	B.S. or B.A.	312	8,261	12 mos.	1	None	Certificate	75
76	Institute of Pathology, Western Reserve University (University Hospitals), Cleveland	H. Goldblatt, M.D.	2 yrs. coll.	700	17,598	12 mos.	15	$50	None	76
77	Mt. Sinai Hospital, Cleveland	R. S. Kline, M.D.	1 yr. coll.	225	7,968	12 mos.	8	$265	Certificate	77
78	Starling-Loving University Hospital, Columbus	H. L. Reinhart, M.D.	B.S. or B.A.	253	5,097	12 mos.	3	None	None	78
79	White Cross Hospital, Columbus	R. S. Fidler, M.D.	B.S. or B.A.	243	5,837	12 mos.	3	None	Certificate	79
80	College of Mount St. Joseph-on-the-Ohio, Mount St. Joseph [20]	E. J. Norris, M.D.	High sch. grad.	...	.....	4 yrs.	2	Coll. fees	B.S.	80
81	Youngstown Hospital, Youngstown	G. B. Kramer, M.D.	2 yrs. coll.	376	8,582	12 mos.	2	None	None	81
	OKLAHOMA									
82	University Hospital, Oklahoma City	H. Jeter, M.D.	B.S.	425	6,679	12 mos.	3	None	None	82
83	Morningside Horpital, Tulsa	H. S. Nauheim, M.D.	1 yr. coll.	225	4,716	12 mos.	3	$150	Certificate	83
	OREGON									
84	Emanuel Hospital, Portland	H. H. Foskett, M.D.	Coll. grad.	260	7,996	12 mos.	3	$150	None	84
85	Good Samaritan Hospital, Portland	C. H. Manlove, M.D.	2 yrs. coll.	316	11,144	12 mos.	4	$150	None	85
86	St. Vincent's Hospital, Portland	T. D. Robertson, M.D.	2 yrs. coll.	280	10,296	12 mos.	3	None	None	86
87	University of Oregon, Portland [21]	M. F. Gourley, M.D.	2 yrs. coll.	...	.....	12 mos.	4	None	Certificate	87
	PENNSYLVANIA									
88	Abington Memorial Hospital, Abington	John Elman, M.D.	1 yr. coll.	231	5,725	15 mos.	5	None	None	88
89	Moravian Seminary and College for Women, Bethlehem [22]	L. M. Beynon, D.Sc.	High sch. grad.	...	.....	4 yrs.	..	Coll. fees	B.S.	89
90	St. Luke's Hospital, Bethlehem	E. A. Rothrock, Jr., M.D.	2 yrs. coll.	192	4,562	12 mos.	3	$75	*	90
91	Bryn Mawr Hospital, Bryn Mawr	Max M. Strumia, M.D.	2 yrs. coll.	237	4,539	15 mos.	4	$125	.....	91
92	Fitzgerald-Mercy Hospital, Darby	P. J. Kennedy, M.D.	1 yr. coll.	200	3,577	12 mos.	1	$150	Certificate	92
93	Harrisburg Hospital, Harrisburg [23]	G. R. Moffitt, M.D.	1 yr. coll.	272	6,044	12 mos.	6	None	None	93
94	Bucknell University (Geo. F. Geisinger Memorial Hospital, Danville), Lewisburg	H. F. Hunt, M.D.	High sch. grad.	161	4,220	4½ yrs.	4	Univ. fees	B.S.	94
95	Germantown Dispensary and Hospital, Philadelphia	F. B. Lynch, Jr., M.D.	1 yr. coll.	240	7,096	12 mos.	3	None	Certificate	95
96	Jefferson Medical College Hospital, Philadelphia	B. L. Crawford, M.D.	1 yr. coll.	631	12 680	12 mos.	6	$100	Certificate	96
97	Lankenau Hospital, Philadelphia	S. P. Reimann, M.D.	1 yr. coll.	261	3,955	12 mos.	2	$25	Certificate	97
98	Mt. Sinai Hospital, Philadelphia	D. R. Mcranze, M.D.	1 yr. coll.	261	7,770	18 mos.	12	$150	Certificate	98

	Name and Location of School	Direction	Entrance Requirement	Hospital Bed Capacity	Yearly Admissions	Duration of Course	Number of Students	Tuition	Certificate Diploma Degree	
	PENNSYLVANIA—Continued									
99	St. Agnes Hospital, Philadelphia	J. H. Smith, M.D.	1 yr. coll.	346	6,960	18 mos.	10	$70	Certificate	99
100	St. Joseph's Hospital, Philadelphia	L. A. Soloff, M.D.	2 yrs. coll.	160	3,007	12 mos.	4	$120	Certificate	100
101	Temple University (Temple University Hospital), Philadelphia	F. W. Konzelmann, M.D.	High sch. grad.	397	9,444	4 yrs.	25	Univ. fees	B.S.	101
102	Moses Taylor Hospital, Scranton	C. L. Mattas, M.D.	1 yr. coll.	125	2,030	12 mos.	2	None	.....	102
103	Scranton State Hospital, Scranton	C. L. Mattas, M.D.	1 yr. coll.	180	4,340	12 mos.	3	None	.....	103
	SOUTH CAROLINA									
104	Spartanburg General Hospital, Spartanburg	R. Mosteller, M.D.	2 yrs. coll.	304	5,111	18 mos.	3	None	Diploma	104
	TENNESSEE									
105	Knoxville General Hospital, Knoxville	R. H. Monger, M.D.	2 yrs. coll.	250	7,081	18 mos.	3	None	Diploma	105
106	John Gaston Hospital, Memphis	H. C. Schmeisser, M.D.	B.S. or B.A.	500	14,871	13 mos.	4	None	Certificate	106
	TEXAS									
107	Baylor University Hospital, Dallas	J. M. Hill, M.D.	2 yrs. coll.	355	12,688	12 mos.	11	$100	Certificate	107
108	St. Paul's Hospital, Dallas	J. L. Goforth, M.D.	R.N. or Coll. degree	270	8,398	12 mos.	2	$100	Certificate	108
109	John Sealy Hospital, Galveston	M. Bodansky, M.D.	1 yr. coll.	367	6,053	12 mos.	7	$150	Certificate	109
110	Robert B. Green Memorial Hospital, San Antonio [24]	E. B. Ritchie, M.D.	1 yr. coll.	150	4,725	12 mos.	3	$200	.....	110
	VIRGINIA									
111	College of William and Mary, Richmond [25]	Special Committee	High sch. grad.	...	.....	4 yrs.	..	Coll. fees	B.S.	111
112	Johnston-Willis Hospital, Richmond	S. W. Budd, M.D.	1 yr. coll.	125	3,481	12 mos.	2	$100	None	112
113	Medical College of Virginia Hospital Division, Richmond	J. H. Scherer, M.D.	2 yrs. coll.	424	9,722	12 mos.	5	$100	Certificate	113
114	Stuart Circle Hospital, Richmond	R. C. Beck, M.D.	Coll. degree	90	2,804	12 mos.	3	$25	[b]	114
	WASHINGTON									
115	V. Cefalu Laboratory of Clinical Medicine, Seattle [26]	V. Cefalu, M.D.	1 yr. coll.	...	.....	12 mos.	3	$200	Certificate	115
116	Deaconess Hospital, Spokane	J. D. Edgar, M.D.	B.S. or B.A.	227	4,463	12 mos.	2	None	Certificate	116
117	Sacred Heart Hospital, Spokane	M. M. Patton, M.D.	Coll. grad.	294	8,467	12 mos.	2	$10	None	117
118	St. Luke's Hospital, Spokane	R. F. E. Stier, M.D.	2 yrs. coll.	175	3,092	12 mos.	3	$10	Certificate	118
119	St. Joseph's Hospital, Tacoma	C. R. McColl, M.D.	2 yrs. coll.	300	3,885	18 mos.	2	None	Certificate	119
	WISCONSIN									
120	Madison General Hospital, Madison	L. McGary, M.D.	2 yrs. coll.	140	4,670	12 mos.	2	None	Certificate	120
121	St. Mary's Hospital, Madison	S. B. Pessin, M.D.	2 yrs. coll.	150	4,282	18 mos.	5	$25	Diploma	121
122	State of Wisconsin General Hospital, Madison	W. D. Stovall, M.D.	2 yrs. coll.	650	11,533	12½ mos.	14	$25	Certificate	122
123	Milwaukee Hospital, "The Passavant," Milwaukee	H. K. B. Allebach, M.D.	2 yrs. coll.	215	6,845	12 mos.	3	$25	Certificate	123
124	St. Joseph's Hospital, Milwaukee	J. Grill, M.D.	2 yrs. coll.	325	6,442	2 yrs.	2	None	B.S.[i]	124
125	Milwaukee County General Hospital, Wauwatosa	J. Grill, M.D.	2 yrs. coll.	1,050	17,940	2 yrs.	4	None	B.S.[i]	125

NOTES

a. Graduate course of one year also offered.
b. Credit may be applied toward B.S. following three years at Wayne University.
c. Also takes students in fourth year from University of Minnesota for B.S. degree.
d. Course includes twelve months x-ray training.
e. Same as for medical students.
f. Course includes six months x-ray training.
g. Credit may be applied toward B.S. following three years at Moravian College.
h. Credit may be applied toward B.S. following three years at College of William and Mary.
i. From Marquette University, Milwaukee.

ADDITIONAL AFFILIATIONS

	No. of Beds	Yearly Admissions
1. Folsom Clinic, Little Rock	...	.....
2. Los Angeles City Health Laboratories, Los Angeles	...	.....
3. Presbyterian Hospital, Denver	150	4,167
St. Anthony's Hospital, Denver	182	3,069
Greeley Hospital, Greeley	65	3,027
4. Georgia Baptist Hospital, Atlanta	164	6,648
Grady Hospital, Atlanta	517	19,940
Emory University Hospital, Emory University	180	4,601
5. Laboratory of State Department of Public Health, Springfield	...	.....
6. Epworth Hospital, South Bend	155	4,018
St. Joseph Hospital, South Bend	125	2,646
7. Lexington Clinic, Lexington	...	.....
8. City Health Department Laboratory, Lexington	...	.....
Lexington Clinic, Lexington	...	.....
Good Samaritan Hospital, Lexington	200	5,914
..... and others		
9. Kentucky Baptist Hospital, Louisville	150	3,549
Louisville City Hospital, Louisville	528	10,643
St. Joseph Infirmary, Louisville	320	6,152
..... and others		
10. Hotel Dieu Hospital, New Orleans	222	6,383
Mercy Hospital, New Orleans	125	2,721
Dr. J. T. Nix Clinic, New Orleans	...	.....
11. Boston Dispensary, Boston	...	.....
State Laboratory, Boston	...	.....
12. Wassermann Laboratory, Massachusetts Department of Public Health, Boston	...	.....
13. City Health Laboratory, Battle Creek	...	.....
14. Minneapolis General Hospital, Minneapolis	616	12,756
University Hospitals, Minneapolis	420	8,872
Ancker Hospital, St. Paul	850	10,753
..... and others		
15. Mississippi State Charity Hospital, Vicksburg	52	2,827
16. Boone County General Hospital, Columbia	46	1,005
University Hospitals, Columbia	109	2,709
17. Kansas City General Hospital, Kansas City	410	10,139
Kansas City General Hospital No. 2 (col.), Kansas City	250	3,158
Kansas City Tuberculosis Hospital, Kansas City	200	296
18. Brady Maternity Hospital, Albany	55	1,228
Memorial Hospital, Albany	120	2,609
St. Peter's Hospital, Albany	151	3,250
..... and others		
19. Children's Hospital, Buffalo	211	5,008
20. Good Samaritan Hospital, Cincinnati	488	12,518
Good Samaritan Hospital, Dayton	200	3,549
21. Doernbecher Memorial Hospital for Children, Portland	70	2,259
Multnomah Hospital, Portland	300	5,310
22. Allentown Hospital, Allentown	300	6,509
Allentown State Hospital, Allentown	1,700	476
Sacred Heart Hospital, Allentown	280	4,127
St. Luke's Hospital, Bethlehem	192	4,582
Easton Hospital, Easton	200	4,847
23. Harrisburg City Board of Health, Harrisburg	...	.....
Harrisburg Filter Plant Laboratories, Harrisburg	...	.....
24. City Venereal Clinic, San Antonio	...	.....
City Tuberculosis Clinic, San Antonio	...	.....
25. Stuart Circle Hospital, Richmond	90	2,804
..... and others		
26. Columbus Hospital, Seattle	200	2 981
Maynard Hospital, Seattle	91	3,070

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SATURDAY, AUGUST 28, 1937

MEDICAL STATISTICS

If the numerous medical statistical papers now being written are to fulfil their purpose, an understanding of the advantages and limitations of the statistical method when applied to medicine is essential. Statistical surveys can have no value unless the underlying diagnosis which serves as a starting point is reasonably correct and so well established that other persons of equal qualifications could make similar observations on the same patients. This important prerequisite cannot be ignored.

The quality of the actual manipulation of medical statistics also needs close attention. With this purpose in mind the *Lancet* published a series of articles on medical statistics by A. Bradford Hill,[1] and these have been collected and issued in book form. The statistical method, Hill states, is required in the interpretation of figures that are dependent on numerous influences. Its object is to determine whether individual influences can be isolated and their effects measured. Before this can be done, the selection of patients must be properly made. Thus, in experiments involving the treatment of patients who are to be compared with controls not given the specific treatment, any deliberate choice of individuals to be treated may lead to error. The treated group may differ from the untreated group in some characteristic which, known or unknown, has an influence on the results. This possibility may be illustrated by a hypothetical study of the treatment of colds by vaccine. If the vaccine is offered to volunteers, the vaccine treated group may be selected on the basis of greater frequency of colds and the expectancy of some advantage from the treatment. In any case volunteers cannot be considered comparable to a random sample of the population from which they are drawn.

Inquiries carried out by means of questionnaires, Hill points out, are *par excellence* those in which selection must be suspected. Since replies are received from only a proportion of the individuals to whom the form is sent, those who choose to reply cannot be considered a representative sample of all individuals approached. The reasons for failure to answer are too manifold and usually too intimately connected with the purpose of the query to require comment.

In the diagram and graph, Hill states, care should be used in selecting scales that give a clear picture of the meaning. A distorted mental image of the significance can be easily produced by improper planning of graphs or diagrams. When the "mean" of many observations is plotted, it is necessary to indicate also how much individual "scatter" is present. The calculation of the standard deviation is another integral part of satisfactory statistical expression. The symmetry of distribution of the individual observations around the mean and the calculation of the standard deviation for each set of observations, although involving some mathematics, cannot be neglected by the physician with data important enough to study in this manner.

It must be recognized, Hill emphasizes, that the observations used in statistical studies are merely samples of all the possible observations that might have been made. Hence the statistical technic in the handling of samples in relation to the universe becomes of great importance. The accuracy of a conclusion based on a sample depends on the size of the sample and the variability of the characters within the universe from which it is taken.

The chapters in Hill's book on common fallacies and difficulties should make invaluable reading for those who wish to avoid the worst pitfalls inherent in the statistical method. No comparison is valid, he states, "which does not allow for the sex differentiation of the fatality rates." Satisfactory standards of comparison must be employed, and their absence invalidates any comparative conclusions. The correct interpretation of either direct or indirect association between factors is also necessary and must be differentiated from purely fortuitous parallelism. Other important dangers are the failure to recognize changes in proportion rates, the use of crude death rates and the neglect, especially in problems of inheritance, to consider adequately chance expectancy. It must be recognized that in dealing with statistical papers it is "probabilities" that are weighed and never, as is sometimes suggested, any question of "mathematical proof." The crux of the matter is the tendency of workers to accept figures at their face value without considering all the factors responsible for them. Furthermore the science of statistics is also advancing and no more absolute agreement on method exists in that field than in clinical medicine. There is little doubt, however, that the quality of study of medical problems can be improved by greater attention to the fundamentals of the statistical method. All attempts to forward this purpose are highly desirable.

1. Principles of Medical Statistics. By A. Bradford Hill, D.Sc., Ph.D. Cloth. Price, 6s. Pp. 171. London: The Lancet Limited, 1937.

CEVITAMIC ACID STIMULATION OF SPECIFIC ANTIBODY PRODUCTION

Clinical and statistical observations have led to the belief that sufficiently prolonged vitamin deficiency causes a reduction in the normal antimicrobic defense of the human body. From this it is concluded that administration of vitamins or vitamin-rich foods will lead to a restoration of normal antibacterial resistance in deficiency diseases and might even increase natural resistance in normal persons on nondeficiency diets. The present commercial exploitation of yeast and numerous other vitamin-containing foods, is based largely on the latter assumption. Adequate experimental evidence in support of advertised claims, however, is still lacking.

In order to prepare animals for a test of the currently alleged immunizing power of vitamins, Jusatz [1] of the hygienic institute at the University of Marburg, Germany, fed growing rabbits on routine laboratory diets rendered vitamin free by prolonged pressure cooking at 120 C. Rabbits thus fed were arrested in their normal development and often remained at a constant stunted weight for several months. Jusatz found a reduction in the normal bactericidal titer in the blood serum of these stunted rabbits and a 90 per cent reduction in their power to form specific antibodies (e. g., horse precipitins) on the injection of antigens (e. g., horse proteins).

The therapeutic effects of numerous commercial vitamins were tested on these stunted animals. Jusatz found, for example, that the addition of a commercial fat-soluble vitamin A to the routine deficiency diet (or its introduction by means of the stomach tube) was without demonstrable effect on the subnormal bactericidal titer of his deficiency animals. Furthermore, vitamin A feeding (or intragastric administration) did not improve the subnormal powers of the animals to produce specific precipitins.

Similar tests with commercial vitamin D gave equally discouraging results. Daily feedings (or intragastric injections) of small doses of viosterol led in about half of the deficiency cases to a transient partial restoration of normal bactericidal titer. This partial restoration lasted about a week and was followed in all cases by a rapid sinking of the antimicrobic index to a new low level. This presumably permanent fall in bactericidal titer was attributed by him to a beginning D hypervitaminosis. Furthermore, viosterol therapy did not improve the subnormal powers of his stunted animals to produce specific antihorse precipitins but almost invariably further depressed this immunizing function.

Equally discouraging results were obtained in tests with water soluble vitamin B complex. As this complex Jusatz used a commercial preparation of dry yeast. Confirming Holsen's [2] previous experimental data, Jusatz found that the addition of dry yeast to routine nondeficiency laboratory diets had no demonstrable effect on the bactericidal index of normal rabbits. In his stunted rabbits he found that from 5 to 8 Gm. of dry yeast added to the daily deficiency diet led to no demonstrable improvement in blood titer. Nor would yeast fed stunted rabbits produce antibodies of higher titers than his non-yeast fed stunted controls.

Disappointing results were also obtained in therapeutic tests with water soluble vitamin C. As vitamin C he used both native and commercially available synthetic cevitamic acid, both being tested in the form of sodium salts. Jusatz found that the addition of from 50 to 100 mg. of cevitamic acid to his daily deficiency diet gave no demonstrable improvement in the serologic titers of the stunted animals nor would such therapy improve subnormal antibody production of stunted rabbits.

Results of theoretical interest, however, were obtained on intravenous injection of massive doses of cevitamic acid; from 33 to 66 mg., for example, injected intravenously caused a transient rise in the normal (or subnormal) bactericidal index. The height of this cevitamic acid immunity was reached in about four hours. The heightened serologic titer was usually lost well before the end of twenty-four hours. By increasing the intravenous dose of cevitamic acid to from 200 to 500 mg., a trebling of bactericidal titer could be demonstrated as late as the twenty-fourth hour, with subsequent fall to the initial titer well before the sixth day. Dr. Jusatz's most important contribution, however, is his demonstration of the stimulating effect of intravenously injected cevitamic acid on specific antibody production. Immediately before each immunizing dose of horse protein, for example, his normal (or deficiency) rabbits were given massive intravenous doses of cevitamic acid, control animals being injected with the same horse protein but without previous cevitamic therapy. Ten days after his last antigenic dose his cevitamic acid reinforced normal rabbits yielded a serum with a precipitin titer of approximately 1:100,000, the average control titer being 1:10,000.

Dr. Jusatz afterward simplified this technic by adding 100 mg. of cevitamic acid to each immunizing dose of horse protein. An average five to seven fold augmentation in specific precipitin production was noted in the stunted rabbits by this simplified technic. In his control deficiency rabbits, for example, the average precipitin titer rarely exceeded 1:1,000. Titers of 1:10,000 and even as high as 1:100,000 were occasionally reached by immunization of stunted rabbits with the horse protein-cevitamic acid complex, injected intravenously.

Although Jusatz's data do not confirm the currently advertised immunizing power of orally administered commercial vitamins, his discovery that massive doses of cevitamic acid injected intravenously demonstrably increase specific antibody synthesis is a discovery of clinical promise and basic scientific interest. If confirmed, his observations suggest numerous practical

1. Jusatz, H. J.: Ztschr. f. Immunitätsforsch. **88**: 472, 481 (Aug.) 1936.
2. Holsen: Ztschr. f. Vitaminforsch. **1**: 3, 1932.

applications to specific diagnosis, vaccine therapy and treatment of chronic bacterial infections. In this connection Hochwald [3] has recently reported that in his hands cevitamic acid seemed to play an equally important accessory part in allergic and anaphylactic phenomena.

Current Comment

MEDICAL SCHOOL SURVEY

The Council on Medical Education and Hospitals has now completed the survey of medical schools that was begun three years ago. The procedure employed in making the study has been described by Dr. Herman G. Weiskotten,[1] and some of the more significant observations were reported to the House of Delegates at Atlantic City.[2] Confidential reports in graphic form have been sent to all the schools for the purpose of assisting them in strengthening their respective programs. In response to this stimulus there are already indications of considerable activity, and substantial improvements are being made in standards of admission, in numbers and qualifications of faculty personnel, and in the kind and amount of practical experience comprised in the clinical teaching. While much still remains to be done, the great majority of schools give evidence of healthy growth and development.

INTERNSHIPS AND RESIDENCIES

Half a century ago newly fledged physicians served for a number of years as apprentices or assistants to older men, thus securing actual experience in the practice of medicine before assuming the responsibilities. The development of aseptic surgery, the ever growing importance of indirect methods of examination and the rapid increase in the number of hospitals have led to the development of an institutional apprenticeship or internship which is considered far more desirable than the old assistantship. So important has the internship become that thirteen schools in the United States have made it a requirement for their medical degree; in eighteen states it is legally prerequisite to licensure. Of the graduates of 1936, excluding those schools in which internship is obligatory, 91.8 per cent voluntarily chose to continue their education in this manner. Fifty-four schools have not made internship compulsory; this does not mean that they underestimate its value. The university which is unable to provide internships under the supervision of its own faculty for all its graduates cannot base its degree on an extramural experience which it cannot guarantee or closely supervise. The internship is now generally recognized as a necessary stage in the training of the physician and is a prerequisite for the position of resident in one of the medical specialties. It is almost universally required for membership in those scientific societies which represent the clinical branches of medicine. Following the internship comes the residency, in general devoted to a limited field. This period of training extends often from two to five years. It represents an important part of the accepted preparation for the practice of a specialty. The examining boards of medicine, surgery, pediatrics, and so on, require a specified amount of institutional apprenticeship of this character. Usually it is necessary to supplement the residency by systematic courses in related medical sciences, such as are increasingly available at the larger universities. The list of approved residencies, pages 693 to 707, has been considerably amplified, so as to give to those interested, as completely as possible, the pertinent data regarding the services described.

GOVERNMENT TO REGULATE THE NAMING OF COMPOUNDS

According to a report in *Drug Trade News*, the Food and Drug Administration has decided to start active enforcement of its long-standing but well-nigh dormant regulation holding a drug product to be misbranded if it contains more than one active medicinal agent but is named after only one of its constituents. The Council on Pharmacy and Chemistry has always objected to the hiding of other active ingredients under a single name. To call a product "X-compound," the latter word to serve as a mask to hide potent drugs which, in some instances, actually are more powerful than the drug from which the "compound" takes its name, is deceptive, whether intentional or not. Organized medicine has insisted that a product should be truthful in name as well as fully named. The stand taken by the Food and Drug Administration that all products should be made to declare clearly and accurately any active ingredients other than the one indicated by the title is a definite advance in the protection of the public against hidden drugs in proprietary medicinal products.

BASAL METABOLISM IN CHILDREN

A special feature of the January issue of the *American Journal of Diseases of Children* was a supplement devoted to two articles dealing with the basal metabolism of children. Talbot and his collaborators [1] recorded the metabolism of 106 healthy girls attending a private school in Boston. The observations were subjected to severe tests for normality and basality and when all the desired information was recorded it was used in group studies. As a result of the careful analysis of the measurements obtained, several important points were established. The most significant factor modifying the metabolism, the authors believe, is geographic location, which cannot be separated from climate. Race does not appear to affect the metabolism, but there is a definite relation between body weight and heat production. Mathematically, the correlation of heat production was closer with body weight than with any other factor studied. A correlation also appeared to exist between the creatinine output and the basal heat production. Since the creatinine output is accepted as a measure of

3. Hochwald, Adolf: Zentralbl. f. inn. Med. **58**: 769 (Sept. 21) 1935.

1. Weiskotten, H. G.: The Medical School Survey, J. A. M. A. **108**: 1026 (March 27) 1937.

2. Report of the Council on Medical Education and Hospitals, J. A. M. A. **108**: 2134 (June 19) 1937.

1. Talbot, F. B.; Wilson, E. B., and Worcester, Jane: Basal Metabolism of Girls, Am. J. Dis. Child. **53**: 273 (Jan., part 2) 1937.

109
37

active protoplasmic tissue, it may be said with assurance that the active protoplasmic tissue of the body is the principal factor of importance connected with heat production. The main difference between the adult and the child, according to Lewis and his collaborators,[2] is that the former is a finished product which remains in statu quo, and the latter is continuously changing. This fact should be considered each time a metabolism reading is interpreted by the clinician. The purpose of the investigations made by Lewis's group was to maintain a study of 100 normal children more or less evenly divided between girls and boys on whom observations were begun not later than one month after birth. Their report is based on studies begun in 1932 as part of the general program of the Child Research Council. The results, therefore, are based on a longitudinal study of normal children. There were 366 basal metabolism tests on fifty-two boys and 271 basal metabolism tests on forty-one girls, all between the ages of 2 and 12 years. The treatment of the data thus gathered indicates that, for the group of normal children under investigation, three of the methods of expressing heat production, namely, calories per hour referred to weight and to surface area, respectively, and calories per hour per square meter referred to age, give the lowest degrees of dispersion. The precise relationship of body build to the basal metabolism of the child, however, cannot be determined until more complete statistical studies in close correlation with anthropometric and other physiologic measurements are available.

EYEWASH FROM THE GENERAL

On August 6, 1937, an announcement from the National Broadcasting Company indicated that General Hugh S. Johnson, rough rider of the Blue Eagle, will make his debut as a radio commentator over the Blue Network on September 27, 1937, being sponsored by the Grove Laboratories, makers of "Bromo Quinine." Quite recently the Federal Trade Commission issued a complaint against the Grove Laboratories, Inc., alleging misleading and exaggerated advertising in the sale of "Grove's Laxative Bromo Quinine Tablets." Moreover, the laboratories stipulated with the commission "to discontinue certain misleading advertising representations in the sale of 'Grove's Emulsified Nose Drops'." In May 1935 the Food and Drug Administration published a notice of judgment alleging that Grove's Emulsified Nose Drops were sold under fraudulent therapeutic claims. Whether or not these little incidents will embarrass the General's future in radio is, of course, a matter for thought. Once upon a time notables did not hesitate to associate their names with the claims of nostrums and "patent medicines"—for "Peruna" Admiral Schley, Rear Admiral Hichborn and Julia Marlowe testified; the divine Sarah Bernhardt exploited "Duffy's Malt Whiskey," and Madam Schumann-Heink told of the wonders of "Fahrney's Blood Vitalizer." The exact place that General Hugh S. Johnson will occupy in this hall of "fame" will no doubt become apparent.

2. Lewis, R. C.; Kinsman, Gladys M., and Iliff, Alberta: The Basal Metabolism of Normal Boys and Girls from Two to Twelve Years Old, Inclusive, Am. J. Dis. Child. 53: 348 (Jan., part 2) 1937.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Graduate Courses.—Stanford University School of Medicine, San Francisco, will conduct graduate courses in cooperation with the city department of health and the San Francisco Hospital, September 6-10. The subjects will include x-ray diagnosis and therapy, emergency surgery and fractures, diseases of the genito-urinary tract, cardiology and electrocardiography, diagnosis and treatment of malignant tumors, surgical anatomy. There will be ward rounds in medicine and clinics in the medical specialties. Two general meetings Monday and Wednesday evenings will be addressed respectively by Drs. Maurice L. Tainter on "Evaluation of Recently Introduced Drugs" and William P. Shepard, "Problems in Industrial Health."

COLORADO

Study of Health Agencies.—A study of public and private health agencies of Colorado Springs and El Paso County is under way by Ira V. Hiscock, C.P.H., professor of public health, Yale University School of Medicine, New Haven, newspapers report. He was invited to make the survey by the Community Chest with a view to recommending a more adequate health service.

Tularemia Following Tick Bite.—A specimen of blood received from Dr. Charles E. Fitzgerald, Craig, was identified by the state department of health recently as showing positive reaction to tularemia. The disease developed from a tick bite of the finger. The patient denied handling dead animals and the point of inoculation was typical in appearance of an infected insect bite which went on to a small ulcer formation. Dr. Fitzgerald had two similar cases last spring, *Colorado Medicine* reported. So far as the laboratory is aware, these cases of tularemia due to tick transmission are the first to be reported in Colorado.

CONNECTICUT

State Medical Journal to Become Monthly.—At the annual meeting of the Connecticut State Medical Society in May it was voted to make the society's journal a monthly publication beginning with January 1938. The journal has been issued quarterly since it was launched in August 1936. The secretary on scientific work, Dr. Stanley B. Weld, Hartford, will continue as editor.

Dr. Cushing Named Director of Studies in History of Medicine.—Dr. Harvey Cushing, Sterling professor of neurology emeritus, Yale University School of Medicine, has been appointed director of studies in the history of medicine with rank of professor at the medical school. Dr. Cushing recently reached the age permitting him to retire. He is also Moseley professor of surgery emeritus of Harvard University Medical School, Boston.

DISTRICT OF COLUMBIA

Medical Bill in Congress.—H. R. 8298, introduced by Representative Dingell, Michigan, proposes to provide for the issuance of a license to practice naturopathy in the District of Columbia to Patrick Joseph Clifford.

FLORIDA

Personal.—Stewart G. Thompson, Dr.P.H., Jacksonville, managing director of the Florida Medical Association, has resigned as secretary-treasurer of the Florida Public Health Association, and as director of the bureau of vital statistics of the state board of health to devote full time to his work with the state medical association.

Society News.—Dr. Chadbourne A. Andrews, Tampa, was elected president and Dr. Lauren M. Sompayrac, Jacksonville, secretary of the Florida Society of Dermatology and Syphilology at its annual meeting in Jacksonville, June 6.——Drs. Arthur L. Walters, Miami Beach, and A. Daniel Amerise, Coral Gables, addressed the Dade County Medical Society, Miami, June 4, on "Modern Management of Diabetes Mellitus" and "Recent Advances of Present-Day Treatment of Snake

Bites" respectively.——Dr. James R. Boulware Jr., Lakeland, addressed the DeSoto-Hardee-Highlands County Medical Society in Wauchula June 8 on "Pediatric Practice in South Florida —A Comparative Study."

IDAHO

Hospital News.—A new hospital was opened at Emmett, June 14; twelve private rooms and two wards are available for the care of patients. Full modern equipment, including air conditioning, has been installed throughout, according to *Northwest Medicine.*

ILLINOIS

Dr. Jirka Resigns as Health Commissioner.—The resignation of Dr. Frank J. Jirka as health commissioner of Illinois, effective September 1, was announced in the newspapers, August 8. His successor has not been appointed. Dr. Jirka has held the position since 1933. He graduated from Northwestern University Medical School in 1910 and is assistant professor of surgery at the University of Illinois College of Medicine, Chicago.

Courses in Obstetrics and Pediatrics.—The state department of public health, through the University of Illinois College of Medicine, Chicago, and in cooperation with the educational committee of the Illinois State Medical Society, is offering courses in obstetrics and pediatrics for registered physicians of the state. A registration fee of $10 should accompany the application to take the course and checks should be made payable to the university. Applications should be sent to Mr. G. R. Moon, examiner and recorder of the Chicago Professional Schools, University of Illinois, 1853 West Polk Street, Chicago.

Society News.—Dr. Samuel M. Feinberg, Chicago, was the guest speaker before the Hancock County Medical Society in Hamilton, July 21; he discussed hay fever.——The Macoupin County Medical Society was addressed, July 27, by Drs. Winston H. Tucker on "Premarital Health Examination"; Paul H. Harmon, "Poliomyelitis" and Lyman Stewart, "Is Prostatectomy to Be Replaced by Transurethral Resection?" All are from Springfield.——Dr. Edward Ross, Alton, addressed the Madison County Medical Society at the Alton State Hospital, August 6, on "Dementia Praecox and Its Relationship to General Practice."

Personal.—Dr. Benjamin Gruskin, director of oncological research in the department of pathology, Temple University School of Medicine, Philadelphia, will spend one week of each month at Paris Hospital, Paris, where he will direct a newly established department of cancer research, it is reported.——Dr. Richard Clark Benkendorf, Chicago, has been appointed superintendent of the Elmgrove Sanatorium, Bushnell, succeeding Dr. Arthur K. Drake, resigned.——Dr. Winston H. Tucker, coordinating epidemiologist, state department of health, Springfield, has been appointed health officer of Evanston, succeeding Dr. John W. H. Pollard, resigned. The appointment is effective September 1. Dr. Tucker was chosen by the Evanston branch of the Chicago Medical Society, Mayor Penfield having asked that group to recommend a candidate, it was reported.

Chicago

Graduate Courses at Northwestern University.—Graduate courses in cardiorenal-vascular medicine and urology will be offered at Northwestern University Medical School during September. The course in medicine will begin August 30 and will continue until September 11; the one in urology will begin September 13 and continue through September 25. Registration is limited to twenty students in each division. The tuition fee is $50 for each course and a deposit of $10 is required to hold a place in the class.

IOWA

More Syphilis Cases Reported.—A study has been completed of the 1,547 cases of syphilis reported to the Iowa State Department of Health for the first six months of 1937. This is two and a half times as many as the 615 cases for the same period in 1936. Linn County has made the most marked improvement in notification, with twelve times as many cases reported to July 1 as compared with the same period in 1936.

Personal.—Edward A. Benbrook, D.V.M., professor and head of veterinary pathology, Iowa State College of Agriculture and Mechanic Arts, Ames, has resigned from the state board of basic science examiners. Frank M. Smith, professor of zoology, Buena Vista College, Storm Lake, will fill the unexpired term. William Strunk, D.Sc., Decorah, Iowa, has succeeded Dr. Benbrook as secretary of the board.

Appointments to State Department of Health.—Dr. James P. Sharon, Fort Dodge, has been appointed associate director in charge of venereal disease control, division of preventable diseases, Iowa State Department of Health, effective July 1. He recently completed six months' special training in venereal disease work at Johns Hopkins Hospital, Baltimore. He graduated from St. Louis University School of Medicine, St. Louis, in 1923. At the same time Dr. Charles K. McCarthy became director of activities for the control and prevention of tuberculosis, to be carried on by the state medical society, Iowa Tuberculosis Association and the state department of health. Dr. McCarthy graduated from Tufts College Medical School, Boston, in 1930.

KANSAS

Personal.—Dr. John C. Fear, Waverly, was guest of honor at a celebration at City Park, July 1, marking his completion of sixty years in the practice of medicine. Dr. Fear graduated from the College of Physicians and Surgeons, Keokuk, Iowa. He has been mayor of Waverly five times and has served one term in the state legislature.——Dr. Clyde W. Miller, Wichita, has been appointed superintendent of the Sedgwick County Hospital, Wichita, succeeding Dr. Harry O. Anderson, who returned to private practice.——Dr. Roscoe T. Nichols, Hiawatha, has been appointed a member of the state board of health to succeed Dr. Charles W. Robinson, Atchison, who resigned.

MASSACHUSETTS

Medical Center for Rural Physicians.—A gift of $300,000 to the Boston Dispensary has been pledged by William Bingham 2d to complete the building of the Joseph H. Pratt Diagnostic Hospital and finance its operation, according to recent announcements. The donation, supplementing a previous gift of $400,000 made by Mr. Bingham in April, will be devoted to the creation of a medical center for the rural physicians of New England. The hospital is named in honor of Dr. Pratt, who is professor of clinical medicine at Tufts College Medical School, Boston. It was reported that Mr. Bingham is primarily interested in rural medicine and his desire is to provide a medical center at which the development of rural medicine may be planned and supervised. The report pointed out that under normal conditions a country doctor, because of his devotion to his practice and his geographic isolation, requires months or years to learn of each new development in the field of medical science. Everything will be done to make it possible for patients needing diagnosis, patients from any corner of New England and from any economic group to get the latest medical advice and for the country doctor to profit from the knowledge and experience of specialists. According to *Time*, physicians will take turns studying at the Pratt Hospital. Mr. Bingham will pay their expenses in Boston and arrange for "exchange doctors" to substitute for them in their home towns. In addition, all New England physicians will have the opportunity to send "the 10 per cent or so of their most puzzling cases" to the Pratt Hospital for study and diagnosis.

MICHIGAN

Cooperative Graduate Courses.—The department of graduate medicine of the University of Michigan in conjunction with Wayne University College of Medicine and the Michigan State Medical Society will begin, September 13, a series of graduate courses in Battle Creek and Kalamazoo jointly; Bay City; Flint; Grand Rapids; Lansing and Jackson, jointly; Marquette, and jointly in Traverse City, Cadillac, Manistee and Petoskey. The lectures and demonstrations will cover the field of general medicine and will be held one day each week for eight weeks. Additional information may be obtained from the department of graduate medicine, University Hospital, Ann Arbor.

Medical Research Institute.—The United Automobile Workers has set up in Detroit a Medical Research Institute under the direction of Dr. Frederick C. Leudrum, according to a press release published in the *Detroit Medical News.* The institute was organized for research in industrial diseases, notably lead poisoning, silicosis, chromium poisoning and industrial skin diseases. It occupies a suite of rooms in the Hoffmann Building, with three examining rooms, laboratory, x-ray room, photo dark room and consulting room, representing an investment of about $10,000. Examinations of workers are to be made by a group of physicians who are members of the Wayne County Medical Society, it was said. Dr. Emery R. Hayhurst, Columbus, for many years consultant in industrial hygiene for the Ohio State Board of Health, directed the organization of the institute, according to the announcement.

MINNESOTA

Mayo Home to Be Used for Educational Purposes.—The residence of Dr. and Mrs. William J. Mayo, Rochester, and the east half of the block on which it stands will be deeded for the Mayo Foundation to a board of trustees to aid the educational aims of the foundation and the University of Minnesota, according to a recent announcement. The members of the board of trustees are, tentatively, Dr. Donald C. Balfour, chairman, Dr. Waltman Walters and Mr. H. J. Harwick. The residence, which was built in 1916, is of reinforced concrete faced with stone and is fireproof. The two lower stories and the tower contain living rooms; the third story is occupied by an assembly room. Dr. Mayo intends to endow the property sufficiently to prevent taxes and general maintenance from becoming a burden on the foundation, it was stated, and details of the use to which the property will be put will be formulated by the trustees. Dr. and Mrs. Mayo will build a smaller house on the southwest section of the block.

Southern Minnesota Meeting.—The Southern Minnesota Medical Association held its annual meeting in Winona August 11. At the morning session at the Winona High School speakers included:

Dr. Fred H. Albee, New York, The Importance of the Lever at the Top of the Femur as a Stabilizing Influence.
Dr. Russell M. Wilder, Rochester, The Use of Protamine Insulin.
Dr. Lewis I. Younger, Winona, Accurate Diagnosis of Appendicitis.
Dr. Ernest M. Hammes, St. Paul, Acute Lymphocytic Meningitis.

At the afternoon session, which was held on the steamboat *Capitol*, a group of case reports was presented by Drs. Moses Barron, Minneapolis, on "Pathogenesis and Treatment of Valvular Heart Disease"; Alexander E. Brown, Edwin G. Bannick and Harold C. Habein, Rochester, "The Use of Sulfanilamide (Prontylin)," and Frederick P. Moersch, Rochester, "Review of the Hypoglycemic Treatment of Mental Disease." An evening session was held at the Winona Country Club with Drs. William J. Mayo, Rochester; Alfred W. Adson, Rochester, president of the Minnesota State Medical Association, and Harold C. Habein, Rochester, president of the Southern Minnesota association, as speakers.

MISSISSIPPI

Society News.—The North Mississippi Medical Society was addressed at its quarterly meeting in Holly Springs, July 28, by Drs. Joseph F. Hamilton, on "Etiology, Pathology and Diagnosis of Infantile Paralysis"; Willis C. Campbell, "Orthopedic Treatment of Poliomyelitis," and Hugh M. A. Smith Jr., "Emergency Treatment and Transportation of Fractures." All are from Memphis, Tenn.

Society Sponsors Graduate Course.—The Central Medical Society is sponsoring the following program to be offered in Jackson, September 7, by members of the faculty of the University of Tennessee College of Medicine, Memphis:

Dr. William T. Pride, Care of an Obstetric Case.
Dr. George R. Livermore, Urinary Lithiasis.
Dr. Gilbert J. Levy, Acute Poliomyelitis, with Special Reference to Its Early Diagnosis and Prevention.
Dr. John L. McGehee, Acute Intestinal Obstruction.
Dr. Willis C. Campbell, Fractures About the Ankle.
Dr. Edward Clay Mitchell, The Care of the Normal Child from Birth Until School Age with Consideration of Those Factors Affecting Its Growth and Development.
Dr. Philip M. Lewis, What the General Practitioner Should Know About the Eye.
Dr. W. Likely Simpson, Foreign Bodies in Air and Food Passages.

MISSOURI

Personal.—Dr. Ralph A. Kinsella, St. Louis, has been appointed a member of the city plan commission.——Dr. Clifton Smith, staff physician at the State Hospital No. 2, St. Joseph, has been appointed superintendent of the St. Louis Training School, succeeding Dr. George A. Johns, resigned.

Committee on Syphilis Control.—At a meeting of the council of the Missouri State Medical Association July 14, Dr. Dudley S. Conley, Columbia, president of the association, announced the appointment of a committee for the study of the control of syphilis, with the following members: Drs. Garold V. Stryker, St. Louis, chairman; Charles C. Dennie, Kansas City; Walter S. Sewell, Springfield; Quitman U. Newell, St. Louis, and Caius T. Ryland, Lexington.

Society News.—Dr. Frederick W. Shaw, Richmond, Va., addressed the Phelps and Crawford County Medical Society in Rolla, July 12, on "Pathogenic Fungi."——Dr. Andy Hall Jr., St. Louis, addressed the Randolph-Monroe County Medical Society, Moberly, June 8, on "Urologic Problems of the General Practitioner."——A program on syphilis was presented at a meeting of the South Central Counties Medical Society, Houston, June 18, by Drs. Garold V. Stryker, Robert E. Britt and John A. Brennan, all of St. Louis.

NEW YORK

County Society Names Executive Secretary.—The Onondaga Medical Society recently voted to establish a central office with an executive secretary in charge and has appointed R. Marcus Dick, Cranston, R. I., to the position. Mr. Dick graduated from the college of business administration of Syracuse University in the class of 1937.

Pneumonia Control Program Expanded.—Production of serums for pneumonia of types V, VII and VIII and any additional types that may be found to be of value in the future will be made possible by a fund of $400,000 appropriated by the recent legislature to the state department of health. About $150,000 will be used to enlarge the facilities of the division of laboratories to meet the increased load of serum production. In addition, the department will be able to develop further its typing facilities, to extend the program of graduate professional education through the Medical Society of the State of New York and of education for the general public and to do more extensive epidemiologic research when occasion offers. The pneumonia control program in its present form was begun Nov. 1, 1935, as a cooperative undertaking of the state health department, the state medical society, the State Association of Public Health Laboratories, the Metropolitan Life Insurance Company and the Commonwealth Fund, the last two giving financial assistance.

An Outbreak of Cowpox.—Infection of a herd of cows with cowpox through contact with a recently vaccinated person and subsequent infection of other persons from the cows was reported in *Health News*, the bulletin of the state department of health, August 9. An 18 year old boy who assisted in the care of a herd of about twenty cows was vaccinated June 7. His vaccination ran an uncomplicated course. About June 18 it was noticed that some of the cows had cowpox. Ten days later a younger brother of the first boy developed lesions on the forearm that were described by a physician as typical vaccination pustules. The second boy became acutely ill and later the pustules disappeared, leaving typical vaccination scars. About July 5 another brother of the two developed a "vaccination lesion" on his hand, which ran an uncomplicated course. Other members of the family were not infected. The father was the only other one who handled the cows and he had been vaccinated four times. The mother had once been vaccinated, but three other children who were not infected had never been vaccinated.

New York City

Paul Hoeber Dies.—Paul B. Hoeber, medical book publisher, died August 20, in Lenox Hill Hospital, of perforated duodenal ulcer. Mr. Hoeber was for many years a book dealer specializing in medical books, developing his publishing activities simultaneously. In recent years he had devoted himself entirely to the publishing field under the imprint Paul B. Hoeber, Inc. In 1935 his firm was absorbed by Harper and Brothers and became the medical department of that house. Mr. Hoeber continued as president of the division, and its publications bore the imprints of both firms. In addition to books and monographs, Mr. Hoeber published *Annals of Medical History*. He was 53 years old.

Distribution of Pertussis Vaccine Discontinued.—The New York City Department of Health recently announced that because of the equivocal results attending the use of pertussis vaccine and the difference of opinion concerning its prophylactic value, the vaccine will no longer be administered at baby health stations on request. Its administration will be limited to a controlled experimental project now being carried on under the direction of Dr. Ralph Muckenfuss, director of laboratories, at the Williamsburgh-Greenpoint health center and at the Prospect Clinic in Brooklyn. Through this project the department hopes to arrive at definite conclusions as to the value of the vaccine for the prevention of whooping cough.

Examination for School Medical Supervisor.—The New York City Board of Education announces an examination for license as school medical supervisor in the bureau for children with retarded mental development to be held during the week of October 11. The final date for acceptance of applications is September 1. Forms may be obtained at the office of the board, 500 Park Avenue, or will be sent on receipt of a request accompanied by a large, self addressed stamped envelop. Applicants must have graduated from a class A medical school, must have a license to practice in New York, must have had twelve semester hours in certain approved courses in school and public health administration and must be between 30 and 45 years old. They must be citizens, except that an alien may be appointed if he has made application to become a citizen. The salary is $4,000 a year. It is requested that all inquiries be made in writing.

V 10
1937

Hospital Employees Enjoined from Striking.—A temporary injunction restraining members of a hospital employees' union of Greater New York from calling a strike, picketing or interfering with the patients, employees or visitors at the Jewish Hospital in Brooklyn was issued August 9 by Supreme Court Justice Albert Conway. The justice incorporated in his decision the hospital's complaint that recited the disorders at the hospital last March when the union took possession of the kitchen and laundry. He said: "The affidavits establish that uninterrupted hospital service for the people of the city is so vital for the preservation of the general health of the community, and especially children, the sick and infirm, that any organized effort to interfere therewith must be regarded as an act of hostility to the common good and such an unlawful object as to demand the exercise of the equity power of the court to the fullest extent."

NORTH CAROLINA

Society Opposes Federal Control of Practice.—The executive committee of the Medical Society of North Carolina at a meeting in Raleigh July 13 adopted a resolution expressing opposition to any plan that involves federal supervision and control of medical practice in the United States. The committee's action was taken following reports from the annual session of the American Medical Association indicating that a plan is being contemplated to place the practice of medicine in the United States, as it involves the care of indigent persons, under federal government control, the resolution stated. The committee, representing the society, affirmed its willingness to cooperate at all times with the proper authorities in order to secure adequate medical care for the indigent, yet at the same time recorded its conviction that such care is a state and county responsibility and is properly a function of the local governmental unit and the local medical profession.

SOUTH CAROLINA

Annual Piedmont Assembly.—The annual Piedmont Post Graduate Clinical Assembly will be held in Anderson September 8-10. Among the speakers announced on the preliminary program are the following:

Dr. Kenneth M. Lynch, Charleston, The Pathogenesis of Tuberculosis.
Dr. David T. Smith, Durham, N. C., Diagnosis and Treatment of Chronic Pulmonary Infections Which Simulate Tuberculosis.
Dr. Frank K. Boland, Atlanta, Treatment After Laparotomy.
Dr. Marion C. Pruitt, Atlanta, Diagnosis and Treatment of Common Diseases of the Anorectum.
Dr. Addison G. Brenizer, Charlotte, N. C., Down the Gastro-Intestinal Tract with Camera and Tools.

At a banquet the evening of September 9 Dr. Boland will speak on "Crawford Long and the Discovery of Ether Anesthesia."

TENNESSEE

Personal.—Dr. Everett E. Carrier, Johnson City, assistant health officer of Washington County since 1934, has been appointed health officer to succeed Dr. Wallace L. Poole, who resigned. Dr. Joseph L. Conyers, Gates, has been appointed assistant to Dr. Carrier.

Society News.—Dr. John Shelton Horsley, Richmond, Va., addressed the Chattanooga and Hamilton County Medical Society, July 1, on "Early Diagnosis and Treatment of Cancer."——Drs. Albert Weinstein and James Frazier Binns, Nashville, addressed the Smith County Medical Society, Carthage, July 2, on diabetes and diarrheal diseases of children, respectively.——Drs. Edward C. Mitchell and John J. Shea, Memphis, addressed the Gibson County Medical Society, Trenton, July 26, on "Summer Diarrhea" and "Upper Respiratory Infection as a Cause of Diarrhea in Children" respectively.——Dr. James W. McElroy addressed the Memphis and Shelby County Medical Society, July 6, on "Congestive Heart Failure."——Drs. William C. Colbert and William M. Adams, Memphis, addressed the Fayette-Hardeman Counties Medical Society recently on "Coronary Thrombosis and Angina Pectoris with Special Reference to Differential Diagnosis" and "Relationship of Plastic Surgery to General Practice" respectively.

WASHINGTON

Hospital News.—St. Peter's Hospital, Olympia, celebrated the fiftieth anniversary of its founding recently. The present building was occupied in 1924.——Ground was broken June 22 for a new orthopedic wing to the Swedish Hospital, Seattle. Gov. Clarence D. Martin turned the first spadeful of dirt.

Personal.—Dr. Richard A. Koch, Tacoma, has been appointed health officer of Whitman County.——Dr. Jesse H. Hendry, Tacoma, has been appointed physician in charge of Tacoma Hospital, a federal institution for Indians, to succeed Dr. John N. Alley.

Medical Murals at Fair.—The Pierce County Medical Society, the Tacoma Public Health Council and the Tacoma District Dental Society are sponsoring a display of thirty murals at the Western Washington Fair to be held in Puyallup in the fall. According to *Northwest Medicine*, the murals depict the history of medicine from the earliest period to the present and include portraits of famous figures.

WEST VIRGINIA

Committee on Syphilis.—Dr. William S. Fulton, Wheeling, president of the West Virginia State Medical Association, has appointed a committee on syphilis to cooperate with the state health department and other agencies in the current campaign. Dr. William M. Sheppe, Wheeling, is chairman of the committee and Drs. Ray M. Bobbitt, Huntington, and Amos H. Stevens, Fairmont, are the other members.

Personal.—Dr. Turner E. Cato, New Cumberland, former health officer of Hancock County, has been appointed health officer of Kanawha County, with headquarters in Charleston.——Dr. Charles N. Scott, Alloy, has been appointed head of the bureau of venereal diseases in the state department of health.——Dr. Donald L. Butterfield, Moundsville, has been appointed medical adviser of the state department of public assistance. He will have charge of work with crippled children, adult physical rehabilitation and emergency medical and hospital care of the department's relief load.

HAWAII

Special Courses.—Dr. Franklin G. Ebaugh, professor of psychiatry, University of Colorado School of Medicine, Denver, is conducting a course in mental hygiene at the University of Hawaii during the summer and is making a survey of mental hygiene problems in Honolulu under the auspices of the chamber of commerce. It is planned to establish a psychiatric clinic.——Dr. Ernestine V. Kandel, Chicago, and Christopher J. Hamre, Ph.D., associate professor of zoology, University of Hawaii, recently gave a series of graduate lectures on hematology before the Honolulu County Medical Society.

GENERAL

Casselberry Prize to Be Awarded.—The American Laryngological Association announces that the Casselberry Prize of $500 is now available for a prize award, decoration or the expense for original investigation or research in laryngology and rhinology. Theses or reports of work must be in the hands of the secretary, Dr. James A. Babbitt, 1912 Spruce Street, Philadelphia, before February 1.

Society News.—The second National Conference on Educational Broadcasting will be held in Chicago at the Drake Hotel November 29-December 1. Topics selected for discussion are the American system of broadcasting, an evaluation of broadcasting from the point of view of the listener, educational broadcasting and the future of radio. George F. Zook, Ph.D., president of the American Council on Education, Washington, D. C., will again be chairman of the conference and Clarence S. Marsh, LL.D., Washington, D. C., is executive secretary.

Twenty-five Thousand Persons Sterilized.—The Human Betterment Foundation of California announced in a recent report that up to Jan. 1, 1937, a total of 25,403 sterilizations had been performed in state institutions under state laws in the United States. This was an increase of 2,241 over the total announced the previous year. These figures do not include operations in state institutions in states that do not have sterilization laws, the report points out, or operations that are primarily therapeutic, not eugenic, in purpose. Twenty-nine states now have sterilization laws, the most recently enacted being that of Georgia. California, whose law was enacted in 1909, has performed the largest number of sterilizations, 11,484. Virginia is next with 2,634.

Aviators Vaccinated Against Yellow Fever.—The Pan American Sanitary Bureau recently concluded arrangements with the Pan American Airways whereby all flying personnel will be vaccinated against yellow fever and all passengers will be required to record where they have spent the six days previous to embarkation, in an effort to prevent transportation of the disease by air. This program was begun several months ago in Rio de Janeiro under the auspices of the U. S. Public Health Service (THE JOURNAL, June 19, p. 2149). It is now announced that a specially trained officer of the service will be detailed to Cristobal, Canal Zone, and Lima, Peru, and later to Miami, Fla., and Brownsville, Texas, to vaccinate the personnel of the air lines at those points. Each passenger will be

requested to fill out a standard form, "Certificate of Origin of Passenger," which asks for "localities visited or resided in for six days prior to embarkation." This period, plus the time consumed on the voyage, gives a fairly wide margin of safety, it is believed. In cases in which passengers have come from areas actually infected and the six day period of incubation since last possible exposure has not been completed on arrival at destination, in the discretion of the quarantine officer, the passengers may be placed in open surveillance, observation or detention. Persons who can present satisfactory evidence of having had yellow fever or who can present certificates of vaccination will not need the certificate. The Rockefeller Institute for Medical Research will supply the vaccine from its laboratories in New York and Rio de Janeiro. As an additional precaution the planes are to be fumigated during the night with an insecticide and thoroughly ventilated in the morning before the embarkation of passengers, according to the agreement, published in *Public Health Reports*, July 30.

Medical Bills in Congress.—*Changes in Status:* S. 1077 has been reported to the House, with amendments, proposing, among other things, to confer on the Federal Trade Commission jurisdiction over the dissemination of false advertisements with respect to food, drugs, devices and cosmetics. S. 1567 has passed the House, proposing to permit the government to produce and sell, under regulations approved by the President, helium for medical use. S. 2970 has been reported to the Senate, proposing to reorganize the agencies of the government, to extend the classified civil service and to establish a General Auditing Office and a Department of Welfare. The Secretary of Welfare, it is proposed, will administer, among others, the laws relating to public health and sanitation. H. Res. 325 has passed the House, authorizing the House Committee on World War Veterans' Legislation to make a comprehensive survey of veterans' hospitals to determine, among other things, what further hospital facilities are needed. The committee will, not later than Jan. 3, 1938, report its conclusions to the Congress "in the form of a bill or otherwise as it may deem necessary." H. R. 2711 has passed the Senate, with amendments, proposing to create a Division of Water Pollution Control in the United States Public Health Service. H. R. 8245, the third deficiency appropriation bill, has passed the Senate. The bill appropriates $400,000 for the National Cancer Institute, $200,000 of which is to be available for the purchase of radium. The bill also authorizes the President to allot to the Public Health Service not to exceed $200,000 to be used to continue the operation of the Hot Springs Transient Medical Center Infirmary, at Hot Springs National Park, Ark. A further appropriation of $50,000 is contained in the bill to enable the American Printing House for the Blind more adequately to provide books and apparatus for the education of the blind. *Bills Introduced:* H. R. 8250, introduced by Representative Somers, New York, proposes to authorize an annual appropriation of $5,000,000 to be allotted to the states for the study, prevention, control, cure and eradication of syphilis. Plans must be submitted to the Surgeon General of the Public Health Service for approval before a state may obtain an allotment. S. 2931, introduced by Senator Caraway, Arkansas, proposes to authorize the Secretary of the Treasury to determine the total amount collected by the government from each physician during the period June 1, 1920, to June 30, 1931, for the privilege of prescribing the hot waters from the Hot Springs National Park and to refund to each physician the total amount so determined to have been collected from him, with the proviso that no physician shall be repaid more than the sum of $660. H. Res. 271, introduced by Representative Collins, Mississippi, proposes to establish a select committee of the House of Representatives to study laws and regulations pertaining to the general welfare of Indians and to require the committee to report the results of its investigations to the House on or before May 1, 1939. The first session of the Seventy-Fifth Congress adjourned, sine die, August 21. Legislation then pending before the Congress will retain its legislative status and may be acted on when the Congress convenes, Jan. 3, 1938.

CANADA

Personal.—Dr. Daniel Nicholson, assistant professor of pathology at the University of Manitoba, Winnipeg, has been promoted to the professorship of pathology, succeeding Dr. William Boyd, who recently went to the University of Toronto as professor of pathology.

Graduate Courses.—St. Michael's Hospital, Toronto, will give a graduate course in medical subjects September 13-18. ——The University of Toronto Faculty of Medicine, Toronto, is offering a course on physical and manipulative therapy and one on cardiovascular disease beginning September 20 and lasting a week, and a course on fractures for a week beginning September 27.——The third annual refresher course will be presented at the University of Western Ontario, London, September 13-17, covering surgery, medicine, obstetrics and gynecology, and pediatrics.

LATIN AMERICA

Orthopedic Meeting in Brazil.—The second congress of the Brazilian Society of Orthopedic Surgery and Traumatology was held in Rio de Janeiro, July 1-4. Among the speakers were Drs. Enrique Lagomarsino, Buenos Aires, Argentina, on "The Technic and Latest Apparatus for Treatment of Fracture of the Neck of the Femur"; Fred H. Albee, New York, "The Importance of the Lever at the Top of the Femur as a Stabilizing Influence and Its Restoration"; Jose Luis Bado, Uruguay, "Treatment of the Supracondylar Fracture of the Humerus"; B. Valentin, Hannover-Kleefeld, Germany, "Systemic Diseases of Bone" and "Congenital Anomalies of the Spine."

FOREIGN

Personal.—Prof. James H. Dible, professor of pathology in the University of Liverpool, has been appointed to the chair of pathology in the British Postgraduate Medical School.——Prof. Jacques Parisot, Nancy, France, has been elected chairman of the Health Committee of the League of Nations to succeed Dr. Thorvald Madsen, Copenhagen.

Symposium on Rheumatism.—The French League Against Rheumatism will hold its annual international symposium on rheumatism October 9 in Paris. There will be a clinical meeting in the morning at the Hôpital Saint-Antoine and a scientific meeting in the afternoon at the Faculté de médecine. Details may be obtained by writing to Permanence de la Journée du Rhumatisme, 23 rue du Cherche-Midi, Paris VI.

Cholera in Hong Kong.—An epidemic of cholera was reported from Hong Kong August 11 and more than 200 deaths had occurred up to August 20, according to the New York *Times*. Other outbreaks were reported from Macao, a Portuguese colony, and Canton. Hong Kong was reported to be crowded with refugees from the war zone. Inoculations of all new arrivals was required and vaccine for 250,000 injections was shipped from Singapore August 20. A report of that date said that health officers believed the epidemic had reached its peak and that it was confined mostly to the poorer Chinese.

Deaths in Other Countries

Prof. John Gordon Thomson, professor of medical protozoology, London School of Tropical Medicine and Hygiene, died in London, August 14, aged 60.

CORRECTION

Assistant Professor of Radiology.—In a news item announcing recent appointments at Vanderbilt University School of Medicine, Nashville, in THE JOURNAL, August 7, page 440, the title of Dr. Herbert C. Francis should have been given as assistant professor of radiology.

Government Services

Changes in Public Health Service

Passed Asst. Surg. Erwin W. Blatter, relieved at Ellis Island, New York, and assigned to duty in the American consulate, Oslo, Norway, in connection with the medical examination of aliens.

Passed Asst. Surg. Harold L. Lawrence, relieved at Oslo and assigned to duty in the American consulate, Berlin, Germany, for the examination of aliens and the enforcement of quarantine procedures.

Surg. Walter G. Nelson, relieved at Berlin and assigned to Paris, France, as relief officer in connection with the examination of aliens and the enforcement of quarantine procedures.

Examination for Commission in the Navy

Examinations for commission in the medical corps of the U. S. Navy and for appointment as interns will be held at all naval hospitals and at the naval medical school, Washington, D. C., October 11. Candidates for admission must be between the ages of 21 and 32 years at the time of appointment and graduates of or senior medical students in class A medical schools. Additional information may be obtained from the surgeon general, U. S. Navy, Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

V 10
1937

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 31, 1937.

War as a Disease

In a recent address to the Royal Institution of Great Britain, Lord Horder declared that war is "the greatest of all modern diseases, though it is primarily a disease of the mind and not of the body. It has existed since the race began, but its casualties were formerly trivial by comparison with those due to ordinary diseases. Today the proportions are reversed. The great war cost us 700,000 lives and 2,500,000 total casualties. . . . Science has reduced enormously the casualties due to the attack of the microbe on man; but science has increased in much greater proportion the casualties due to the attack of man on man." The danger of another great war is never far from the thoughts of Europeans, and measures for averting that catastrophe are a constant preoccupation of England. It is therefore not surprising that a movement has arisen in the medical profession, which has such a special experience of the horrors of war, to play a part in its prevention. An organization of physicians called the "Medical Peace Campaign" has therefore been formed. It holds meetings and publishes a bulletin. It has adopted the program of the International Peace Campaign, of which the main points are (1) recognition of the sanctity of treaty obligations, (2) reduction and limitation of armaments and (3) strengthening of the League of Nations for the prevention of war.

At the recent annual meeting of the British Medical Association, a resolution was moved that the council be asked to appoint a committee to consider and report on the psychologic causes of war and to press for an international section under the Health Organization of the League of Nations to deal with the psychology of war, on similar lines to the section now dealing with epidemiology. Reference was made to a committee of the Netherlands Association appointed six years ago with a similar purpose. Objection was made that any effective action must be international and an amendment to that effect was carried. The resolution, modified as follows, was then carried: "That the Council be asked to press for an international section, under the health organization of the League of Nations, to deal with the psychology of war on similar lines to the section now dealing with epidemiology."

Pharmaceutical Conference: Criticism of the Politicians

At the British Pharmaceutical Conference Mr. T. E. Lescher, managing director of a well known firm of manufacturing pharmacists, said in his presidential address that our present system of allowing any one to handle the majority of drugs and medicines, on paying of a dollar license annually, encouraged the exploitation of the public by the distribution of "cure-alls" without the slightest knowledge of their properties on the part of the vender. The official attitude in its most debased form was shown recently in the report of the Select Committee of the House of Commons on Medicine Stamp Duties. The committee recommended a sales tax on medicines and even on foods and beverages, if claimed to be beneficial to health. That in a so-called enlightened age a body of public men should suggest that the state was justified in taxing substances used in ill health was unbelievable. Before 1914, under our *laissez faire* policy, the fine chemical industry in Britain, particularly on the organic side, was not extensive, and we were largely dependent on imported products. War experience gave British chemists their opportunity, and the manufacture of fine chemicals and biologicals today was on a scale sufficient to meet the requirements of our trade both at home and overseas. The advance of knowledge in recent years made it safe to prophesy that further important discoveries were just round the corner and that biologic and therapeutic products would increase in variety.

The Treatment of Pleural Effusions

In a discussion at the Royal Society of Medicine on the treatment of pleural effusions, Dr. Burton Wood said that many effusions required no active treatment. They were benign and might even be protective in their effect. Thus a pleural effusion was the commonest manifestation of pulmonary tuberculosis in childhood, when it appeared to be analogous to other reactions of allergic type seen in child "contacts." Such effusions had little effect on health, sometimes disappeared rapidly, and were rarely followed by parenchymatous disease. Some of the adolescent pleurisies he thought were of a similar type. For this reason he held that a young person with a "simple" pleural effusion, and possibly in a hypersensitive state, should not be exposed to the risk of further infection, for example in a sanatorium cubicle shared by a bacilliferous patient.

What was the after-history of patients whose lungs were apparently sound at the time of occurrence of a simple effusion? It had always been taught that the expectation of subsequent phthisis was from 40 to 50 per cent, but recent figures from Scandinavia suggested that 90 per cent of the patients made a lasting recovery. Time had not enabled Dr. Wood to make an exhaustive inquiry and he could not claim statistical accuracy, but in a series of thirty of his own cases, comprising young persons of the working class (from 15 to 35 years of age at the onset) twenty-seven have remained well and of the three who had died all had bilateral pleurisy.

If effusion is suspected, x-ray examination should precede exploration. Blind tapping was justifiable only for the relief of urgent symptoms, and haphazard aspirations in the front bedroom were to be deprecated. If the disease ran a favorable course the fluid would be absorbed spontaneously, but if of less benign type aspiration would be followed by fresh outpouring of fluid, which would thicken as aspirations were repeated. The end result might be a chest still full of fluid, but empyematous fluid. The existence of a tuberculous focus in the underlying lung was often assumed, and this had given rise to the practice of air replacement and the maintenance of the pneumothorax for some months to protect the lung. This treatment was based on speculation unless the effusion was known to cover diseased lung. When the large size of an effusion caused mediastinal displacement or distress, air or oxygen replacement was of course necessary, but Dr. Wood thought it useless to try to prevent reaccumulation by pneumothorax. If hectic fever persisted an aspiration would sometimes be followed by a fall in temperature. It was justifiable to try the effect of this, with or without replacement, but repeated aspirations were undesirable. When fluid persisted for a month or more it was customary either to remove a few ounces to encourage absorption of the remainder or to try to secure a dry pleura. It was true that fluid if left would ultimately give rise to pleural thickening, but an obliterative pleurisy, with the fibrosis to which it gave rise, was a conservative process. Fibrosis began where tubercle ended.

With regard to the effusions complicating artificial pneumothorax, many of these were benign in their effect. An incomplete collapse was sometimes converted into a complete collapse, and a cavity held out by adhesions closed before their section could be considered. Sometimes an effusion rapidly filled the pleural space, and it was tempting to replace it by air in the hope of maintaining a controlled collapse. But replacement was usually followed by reaccumulation, and repeated aspirations brought the risk of empyema. If one or two air replacements failed, Dr. Wood thought it better not to continue intervention. A natural serothorax was a good substitute for a pneumothorax and the effusion was slowly absorbed.

PARIS

(From Our Regular Correspondent)

July 31, 1937.

First International Congress of Industrial Medicine

The first International Congress of Industrial Medicine was held June 2-6 in Paris. Following an introductory address by Professor Carozzi of Geneva on the important influence of the International Labor Bureau of the League of Nations on legislation in occupational diseases and factory sanitation, the various papers were grouped under four headings: group 1, teaching the subject of industrial medicine; group 2, pathologic aspects of industrial medicine; group 3, prophylaxis and treatment; group 4, legislation.

TEACHING INDUSTRIAL MEDICINE IN FRANCE

A paper on teaching methods as employed in the Paris Medical School was read by Professors Duvoir and René Fabre. A distinction was made between preventive social medicine, which is a branch of hygiene, and technical social medicine, which in France includes industrial medicine and is considered a branch of legal medicine. The course consists of forty lectures, including (1) generalities and comparative legislation of occupational diseases, (2) study of the latter caused by chemical, physical, plant and bacterial agents, (3) clinical syndromes of occupational origin, (4) diseases in miners, in metallurgical, electrical and chemical industries and in those working at high altitudes, engaged in farming and fishing, and (5) sports at factories. These conferences are supplemented by laboratory work in industrial toxicology for those who wish to receive a degree in industrial medicine.

PATHOLOGIC ASPECTS OF INDUSTRIAL MEDICINE

In group 2 the first paper was by Professor Loeper and Dr. Gilbrun, on professional oxycarbonism. In estimating the carbon monoxide content of the blood by the Nicloux method, the authors were able to detect a chronic carbon monoxide intoxication in five gas works employes who complained of headache and digestive disturbances and who were anemic.

Dr. Kohn-Abrest said that a certain percentage of carbon monoxide is normally found in the blood. On the other hand, he has noted what would seem to be paradoxical, that in acute intoxication all the carbon monoxide is eliminated in a few hours, whereas in a chronic intoxication small amounts can be found for months. There seems to be a difference of mechanism of fixation by the blood in acute and chronic cases.

Dr. Sezary presented a paper on occupational skin lesions and proposed the following classification as being of prognostic, preventive and therapeutic interest. He first distinguished dermatoses due to physical, chemical, microbic and parasitic agents which can involve large groups of workers employed under the same physical conditions. Second, dermatoses due to chemical, plant or microbic agents which affect only those especially predisposed. This predisposition can be demonstrated by epidermal reactions, which have much value in the diagnosis of this group of dermatoses.

The problem of intolerance in industrial medicine was the subject of a paper which Drs. Tzanck and Sidi presented. They said that a distinction should be made between intoxications due to the direct action of the poison and the individual reactions of intolerance, as regards legislation in legal medicine. They explained the problem of intolerance and distinguished its clinical, evolutive and biologic variations, which permit clearing up our conceptions of idiosyncrasy, anaphylaxis and hypersensibility. All these have certain features in common. They are all individual, all vary according to the environment in which they occur, and all are different from intoxications. In the discussion of this paper, Duvoir emphasized the importance of predisposition. He agreed with the authors in considering intolerance of intoxication as fundamental. The tolerant worker can resume his occupation after an intoxication provided no serious organic sequels persist, whereas the worker who has a lack of tolerance for a certain substance must be definitely excluded from taking up the same work, no matter how mild the first intoxication may have been.

Factory work in relation to pregnancy was discussed by the obstetrician Professor Brindeau. Certain occupations that involve prolonged standing, intense vibrations or bending over should be forbidden during pregnancy. Especially to be avoided is work with aniline dyes. Excessive work or intoxications can be followed by abortion, premature labor or the birth of undersized children. The present laws are inadequate. Women during pregnancy ought not to work in a factory and should restrict their activities to housework, but the allowances paid by the state are insufficient and hence it becomes the duty of every employer to interest himself in the protection of women workers during pregnancy.

In a paper on latent benzinism in factories around Paris, Dr. Tara stated that where benzene is used he had observed an asthenia syndrome associated with blood changes in the form of a mild anemia, leukopenia, agranulocytosis with eosinophilia and prolonged bleeding time. Usually there is inadequate ventilation in such factories.

The question of traumatic arthritis of the elbow in workers who use hammers or pneumatic tools was taken up by Drs. Belot and Nahan. They found joint changes similar to those observed in arthritis deformans. Clinically, only slight pain and stiffness of the elbow joint is complained of. Radiography often reveals marked changes such as enlargement of the diaphyses, osteophytes and intra-articular detached pieces of cartilage. The incidence of such changes in workers is very small, only 2 per thousand according to Rostock. In the discussion, Dr. Desoille maintained that such joint sequels were often the result of improper use of the tools. This was also Dr. Koelsch's opinion.

PROPHYLAXIS AND TREATMENT

Dr. Kohn-Abrest reported that great progress had been made in purifying the air in most factories, as the result of frequent analyses for carbon monoxide and dioxide, combustible gases and chlorine derivatives of hydrocarbons by the toxicology laboratory of the city of Paris.

Dr. Barthe spoke on the duties of a physician engaged in the practice of industrial medicine. The chief objective should be prevention; next he should act as an adviser in questions involving safety, hygiene and scientific organization of the daily work. There should be a team composed of the physician, engineer, sanitary technician and psychotechnician to study every problem involving the safety and health of the employes. Arrangements must be made with the nearest hospitals, dispensaries and social service organizations, in case the factory does not possess these.

Dr. Lahy described the first laboratory of psychotechnic in France established by a large railroad company in 1931. This paper showed that the application of preliminary psychotechnical examination of candidates for positions had resulted in allowing the railroad to avoid placing 60 per cent of those tested in places where accidents were a potential factor and giving them other work.

Dr. Marchandise of Belgium, in a paper on medicosocial aid for workers handicapped by cardiovascular disease, stated that the medical and social aspects of the question must be considered separately. A thorough preliminary examination of every worker must be made to permit adaptation of his duties to his physical forces. The best tests, in addition to the physical examination, include the use of tachymetry to measure the rapidity of the circulation and radioscopic control of the aortocardiac shadow. Workers with marked hypertension have a mortality coefficient much higher than those in the same con-

V 10
1937

dition who are not obliged to work and hence can be properly cared for. A worker with hyposystole ought not to be allowed to work.

LEGISLATION FOR OCCUPATIONAL DISEASES

The first paper in group 4 was by Professor Ranelatti, who described the Italian laws for six occupational diseases: lead, mercury, phosphorus, carbon bisulfide, benzene and ancylostomiasis. The various diseases incident to coal mining are considered under industrial accidents. Concomitant with better organization, a notable decrease has been noticed in the incidence of these occupational diseases, even in the case of lead poisoning.

Delegates from France and other European countries read papers on the legislation in their respective countries. Of interest was a statement by Dr. Bauer of Germany that there are now twenty-six occupational diseases which are indemnified in that country.

Specialists in Social Medicine

An organization known as the Social Insurance Medical Advisers and Inspectors held an annual meeting June 4-7 at Clermont-Ferrand, in central France. The two questions selected for discussion were (1) the rôle of medical control in social medicine in general and in social insurance in particular, and (2) treatment at health resorts of the socially insured. At the beginning, those who accepted these positions of advisory and inspection type in social medicine encountered a great deal of opposition on the part of their colleagues. The medical men who represented the interests of the caisses, or social insurance disbursing bureaus, were regarded as a sort of police force. At present, thanks to the tactful and more ethical methods followed by most of the medical inspectors, this opposition has been overcome to a great extent. This is especially true of those inspectors who have had special training in their duties toward both the medical attendant and the insured.

The social rôle of the medical comptroller or inspector was defined as (1) search for social diseases and those incident to industrial medicine, and (2) close cooperation with all the government public health agencies, such as social hygiene, maternal and infantile protection and adaptation to vocations.

After the meeting, a number of health resorts in the vicinity of Clermont-Ferrand were visited in order to familiarize the medical officers of the social insurance with the advantages of sending the insured there for treatment.

BERLIN

(From Our Regular Correspondent)

July 19, 1937.

The Evaluation of Radioactive Therapeutic Substances

Physical and chemical qualities of radioactive substances were discussed by Dr. S. W. Souci before the Medical Society of Munich. For the evaluation of the numerous radioactive products now on the market (natural and artificial radon-containing waters, radium compresses, radioactive ointments for the skin, radioactive fats and radicactive oils) and the apparatus (emanators, radonators, activators) designed to facilitate the administration of these substances an exact knowledge of radioactive decomposition is indispensable. The atomic fragments produced by these substances appear as alpha rays (positive charged helium nuclei) and beta rays (negative electrons). A third type, the gamma rays, consist of electromagnetic vibrations with great powers of penetration. Conversely, the penetrating capabilities of the alpha and beta rays are proportionately small. Since the rays are effective only if absorbed by the organism, the physiologic reaction is chiefly dependent on the density of the layers of tissue irradiated. There are three routine methods of the administration of radioactive waters: drinking, balneotherapy and inhalation. The radon ingested if the water is drunk passes rapidly from the gastro-intestinal tract into the circulation and in a short while is given off by the lungs. By preliminary ingestion of a meal or by combining the radon with fats or active charcoal, the period during which the emanation remains in the organism may be increased. In contrast to radon, radium element remains retained in the body for a long period and comes to be stored in the bones. Cumulative storage of even small single doses can cause severe damage or even death after a long time. For this reason substances that contain radium are administered only after special precautionary measures have been taken. In balneotherapy, radon because of its solubility in water and lipoids can gain entrance to the organism through the skin as well as through the lungs and can thus become effective in sufficient concentration. At the same time there is formed on the cutaneous surface a radioactive deposit, consisting of the products of radon decomposition, which gives rise to a secondary effect by its beta and gamma radiation. In view of the ubiquitous distribution of radium and its decomposition products, many mineral and curative springs present some degree of radioactivity. Springs possessed of truly powerful radioactive properties are, however, rare. The radon content of radioactive water is still sometimes measured by the so-called mache unit in Germany and Austria. According to its definition this is a unit of concentration and not of quantity, yet the mache unit has been extensively but erroneously used as a quantitative unit as well. To avoid uncertainties only the international quantitative unit, the "microcurie," should be used; that is, the amount of radon should be the equivalent of 1 microgram of radium; if, however, the term mache unit is applied, it is absolutely necessary that the relative value also be expressed. It is difficult to refer to a particular unit of concentration for therapeutic purposes. The German Society of Balneotherapeutics and Climatology about five years ago formulated guiding principles which placed the evaluation of radioactive therapeutic springs on a sounder basis by more precise definition of terms. According to the society, no health resort can properly be designated a "radium spa" unless it has at its disposal natural radon or radium containing mineral waters the radioactive powers of which amount to at least 80 mache units or 10^{-7} (0.0000001 microgram) of radium per liter. Radioactive spring water bottled for shipment must at the time of consignment to sick persons still contain a minimal radioactive value of 800 mache units per liter.

Juvenile Delinquency

The fürsorge-erziehung (juvenile delinquent bureau) undertakes the supervision and upbringing of juvenile delinquents and other young persons in need of strict supervision. According to official statistics there were on March 31, 1936, about 60,000 young persons in charge of the fürsorge. In the year 1925 there were 100,000 of these minors dependent on public care, but by the year 1933 this number had sunk to 52,000. The latest figure accordingly represents a new increase, but this is explicable as chiefly due to changed prerequisites of commitment as well as to the increased birth rate of the postwar years. About 55 per cent of the delinquents are boys. The period of life covered by the activities of the fürsorge has been somewhat shortened. Despite the decline in unemployment, the proportion of unemployed among the fürsorge's charges has risen again. The principal manifestation of delinquency among male minors that brings about commitment to the fürsorge is in Prussia some offense against property; about 55 per cent of male delinquents are committed on these grounds. Sex delinquents constituted about 14 per cent of the male inmates; the number of vagrant minors increased by 4.5 per cent. Among the girls, sexual delinquency was the most frequent cause of commitment; it was the cause in 56 per cent of cases. The total expenditure of the fürsorge-erziehung for the entire country amounted in 1936 after deduction of the

reimbursements and other income to 28,100,000 reichsmarks. The average annual gross amount expended per juvenile delinquent (without deduction of income) is 534 marks.

The Cancer Problem

Willy Baensch, professor of radiology at Leipzig, in a recent discussion of the cancer problem before the medical society of that city made several important observations. The abundance of new contributions to the literature on the causation and treatment of cancer is characterized by a wide divergence in attitudes, which range from cancerophobia and therapeutic nihilism on the one hand to optimistic claims of new methods of cure on the other. The number of fatal cancer cases in Germany at present may be estimated at from 80,000 to 100,000 and in the United States at about 125,000. A careful study of etiologic factors leads one to conclude that the production of cancer is not based on any single factor but on a multiplicity of factors. Certain irritations will produce cancer in one organism, whereas a second organism subjected to identical stimuli will fail to manifest the disease. This susceptibility to cancer formation appears to be to some extent inheritable. The precancerous state of irritation among experimental animals may last from three to four months, as in the mouse, or one year, as in rabbits, whereas in man it may endure for about eight years. The irritant may be mechanical, such as chronic pressure of a dental prosthesis, eyeglasses or a pessary, chemical, as when cancers are produced by a known cancerigenic irritant substance, or chemicophysical, as when the irritation is due to long standing injuries from lights and emanations. These two factors (predisposition and irritation) are ultimately combined with a third or liberating factor which is still unknown. Some believe in an invisible virus, which no one yet has been able to identify. One type of malignant neoplasm that may safely be ascribed to just such a virus is the Rous sarcoma of fowls. It seems probable that metabolic disturbances of organic function also play a part in the pathogenesis of cancer.

AUSTRALIA

(From Our Regular Correspondent)

July 15, 1937.

Graduate Medical Education in New South Wales

Graduate teaching in medicine has been carried out in Sydney for many years. Since 1900, courses have been arranged at intervals by the University of Sydney or the New South Wales Branch of the British Medical Association. In April 1929 the New South Wales Branch of the British Medical Association formed a standing committee of the Council for the organization of graduate work. This committee arranged a number of regular courses. In September 1932 the New South Wales Branch of the British Medical Association formed a committee, which after several years approached the University of Sydney with the idea of closer cooperation and Aug. 12, 1935, the senate adopted a new by-law for the establishment of a committee to be known as the New South Wales Post-Graduate Committee in Medicine. All money and property of the New South Wales Permanent Post-Graduate Committee, which reverted to the New South Wales Branch of the British Medical Association, was presented by the branch to the University of Sydney for use by the new committee. In 1936 the New South Wales government, on the recommendation of the minister for public health, made a grant of the sum of £1,000 to the Post-Graduate Fund in Medicine for the purposes of the committee. The Post-Graduate Committee has available to it for teaching purposes and courses for graduates the resources of the University of Sydney and many of the hospitals of New South Wales. Each year the committee holds a general revision course of instruction given at all the larger metropolitan hospitals and designed for general practitioners. Courses of a more special nature are arranged and week end courses are held at country centers. Instruction for higher degrees and diplomas is provided. The committee also makes arrangements for residence at obstetric, children's and general hospitals, instruction in the diseases of children and infant feeding, attendance at clinics for the diagnosis and treatment of cancer and tuberculosis, and tuition in anesthetics. A feature of graduate education in New South Wales has been the organization of a special hospital for graduate teaching. Aug. 1, 1936, an act was passed reconstituting the Prince Henry Hospital. A board of directors of fifteen was appointed, whose duties are to conduct and maintain the hospital for the treatment of public, private and intermediate patients and to make such provision as may be necessary or desirable to enable graduate teaching and research work in medicine to be carried out at the hospital by or under the authority of the University of Sydney. The board may make provision for the training of medical superintendents, hospital managers, hospital secretaries, hospital matrons, nurses, masseurs, almoners, dietitians, x-ray technicians and pathology technicians. The Prince Henry Hospital is undergoing a period of reconstruction and development preparatory to the introduction of regular graduate instruction and research, which it is hoped will start during the present year.

Medical Research in Australia

Prof. Frederic Wood Jones, professor of anatomy at the University of Melbourne, takes rather a pessimistic view of the problem of medical research in Australia. Professor Jones has been a member of the staffs of universities in Europe, America and Australia, and subsequent to the preparation of his report he resigned his chair in Melbourne to take up a similar position at the University of Manchester, England. As a reason for this action he stated that the opportunity for research work is too restricted in Australia, greater opportunities being given in overseas countries. Professor Jones is one of the most prominent figures in Australian academic medicine. A brilliant orator, a forceful writer and an original thinker, he will be a serious loss to medical education in Australia. He considers that the best research workers are being lost to Australia through lack of suitable prospects of academic research. The best type of research worker is he who from his student days is set in his idea of becoming a research worker—a man to whom the lures of successful practice mean nothing but who is determined on investigation for its own sake. Australia is losing men of this type in a small but continuous stream. One of the difficulties in Australia is that the routine teaching and administrative duties that have to be undertaken by the staff of the medical schools is so pressing that, with the best will in the world, it is in many cases impossible for research work of any real importance or any real continuity to be carried out. The demands made on the occupant of a chair for doing work outside his teaching routine are mainly those of solving problems for medical men practicing in the state, and in answering innumerable letters seeking information about all sorts of matters usually unrelated to the professional sphere of the recipient.

Research of national importance must have two prerequisites. The first is coordination of effort, and the second is directorship. Professor Jones doubted whether, in the absence of coordinated team work, it was wise to endow with large sums of money the prosecution of such studies as cancer research in Australia. Close coordination between the medical biologist, the chemist and the physicist within a single research institute is almost essential if a successful attack is to be made on the problem of malignancy. It would be one of the miracles in the history of medical science if the solution of the problem should be revealed to any isolated investigator no matter how great his scientific attainments or how ample the funds at his disposal. Until team work is better organized than it is today

in Australia it would be wise to give preference to the "individual" type of investigation in the allocation of research grants. Meanwhile, every effort should be made to create conditions that would make well coordinated team work a possibility in the Australian medical schools. Another handicap to medical research in Australia is the lack of trained technical assistants. The present meager finance devoted to the teaching departments of medical schools does not permit of proper advancement to those who take on this type of work as a life occupation. In conclusion, Professor Jones considers that it is a waste of money to attempt to create a research worker to deal with a specific problem, but it is always a wise investment to place the real research worker in a position of comparative freedom from urgent financial problems.

Abortion in New Zealand

At the request of the obstetric and gynecologic section of the New Zealand Branch of the British Medical Association, the prime minister of New Zealand set up a commission to inquire into the incidence of septic abortion in New Zealand. A questionnaire was sent to all the executive officers of the divisions of the British Medical Association of New Zealand. These were collated by the obstetric section of the association, and a positive answer was given to the question "Do you consider that induction of abortion is extensively practiced in New Zealand?" In reply to the question "What practice do you consider to be the more common?" the consensus was that the single woman resorts to the abortionist but the married woman, on account of the expense, more commonly attempts self induction. Drug taking is largely practiced in the first instance. This usually fails and is followed by other methods of self induction, such as the insertion of an instrument into the uterus, purgation combined with vaginal douching, and violent exertion. Drugs alone are seldom effective unless taken in doses that are dangerous to the mother. Criminal abortion is usually carried out by the introduction of a catheter into the uterus. Other methods adopted were the injection into the uterus of fluids such as soap solutions, saponated solution of cresol or iodine, and the use of tents. It was stated that septic abortion usually occurs in the induced class, especially the instrumentally induced group, but that there were cases of sepsis following spontaneous abortion. The commission of inquiry in its final report estimated that at least one pregnancy in every five ends in abortion. About 66 per cent of these are unethically induced, either through the agency of criminal abortionists or by self induction. Deaths from septic abortion occur almost entirely in such cases. These deaths have greatly increased in recent years and now constitute one fourth of the total maternal mortality. In some districts it amounts to nearly half of the total maternal mortality. According to comparable international statistics, New Zealand has one of the highest death rates from abortion in the world. The main causes for abortion are (1) economic and domestic hardship, (2) changes in moral and social outlook, (3) pregnancy among the unmarried and (4) fear of childbirth. Suggested remedies to overcome these causes are: 1. Financial, domestic and obstetric help provided by the state. 2. The correction of the outlook of women today which expresses itself in a demand for a right to limit or to avoid a family. The widespread half knowledge of birth control methods encourages a false sense of security; these ineffectual methods often fail, and the temptation to abortion then follows. 3. More careful education of the young in matters of sex. The advertisement of the sale of contraceptives to young people should be prohibited, but at the same time there should be a more tolerant attitude on the part of society toward the unmarried mother and her child. 4. Education of the public with regard to the fact that New Zealand now has a very low death rate in actual birth, and that relief of pain in labor is largely used. Further efforts in the direction of the relief of pain should be explored. The public should be educated to the responsibilities and privileges of motherhood and the advisability of self discipline in certain directions. Knowledge of birth control should be given through responsible channels, mainly through well informed doctors, and to a certain extent through clinics associated with the hospitals. Through women's social organizations, the womanhood of New Zealand should be appealed to, and the selfish and unworthy motives which have entered into family life should be corrected. The sale or distribution of contraceptives should be restricted to practicing chemists, doctors, hospitals and clinics, and public advertisements of contraceptives should be prohibited. No alteration of the law as regards abortion was recommended, and it is considered that when the reasons for the operation are valid the doctor runs no risk of prosecution. The committee strongly condemned any suggestion of legalization of abortion for social and economic reasons. It was realized that the legalized performance of the operation by doctors in hospitals might reduce the incidence of criminal abortion and deaths from septic abortion but that this procedure could not be justified on account of its association with grave moral and physical dangers. The committee realized that it was unable to put forward a complete and certain solution of this grave problem, but the full publicity given to the investigation would, it was hoped, awaken the public conscience, and the ultimate issue would rest with the attitude and the action of the people themselves.

BUCHAREST

(From Our Regular Correspondent)

July 26, 1937.

The Rumanian Medical Association

The annual congress of the Rumanian Medical Association was held July 18 in the palatial residence of the association in Bucharest, under the presidency of Prof. Peter Tomescu. In his address, Tomescu said that one object of these annual congresses is to examine the social and material position of the medical profession and to search for the best way to adapt itself to the present social scheme. The association is gaining in importance in the eyes of the government and now must assume the task of preparing an adequate plan for the hygienic organization of the whole country. In recent years the association has dealt more and more intensively with the health of the villages. What has been accomplished in this field is due in the main to the work of the minister of health, Dr. Costinescu.

The congress voted approval of the following resolutions: 1. Military field physicians shall be appointed in peace and also in war, according to their special abilities and ages. Reserve physicians shall be given rank corresponding to their civilian occupation. 2. Toward the elimination of obstacles to medical practice, the association will fight for a better distribution of physicians, for it is not satisfactory that in some cities the ratio of physicians to population is 1:300, while in certain rural districts the ratio is one physician to 19,000 people. 3. There should be a revision of foreign medical diplomas obtained since the World War. 4. A sickness insurance bureau for physicians should be organized. 5. Physicians employed in certain public offices should not be dependent on politics but should be appointed definitively and for life, for only so can they perform their duties with full devotion. Professor Gane, representing the minister of health, stated that it has become almost a tradition since 1910 that the minister fulfils the wishes of the medical association. While in 1933 the total number of rural physicians was 933, this number is now 1,600. The government has tried to improve the situation of rural doctors and at present they enjoy a salary which ensures them a living worthy of their standing. In the last three years, 550 dispen-

saries were opened and five new foundling houses were established. The budget of the ministry of health approaches two milliard lei ($20,000,000).

The three 10,000 leu prizes offered by M. Cantacuzino, proprietor of the huge serologic laboratory in Bucharest, were awarded to P. Ramneantu for his elaborate charts showing the growth, weight and state of nutrition of Rumanian children between 5 and 15 years of age; to R. Patroianu for his work on latent tuberculous infection in children vaccinated with BCG, and to N. Paraschivescu for his study "Contributions to the Study of Transmissible Paralysis."

Abramovici and Moisescu read a paper on the present difficulties of medical practice. The trend to socialization and nationalization wholly ruins private medical practice. Social insurance and other collective activities founded for the purpose of supplying cheap medical service more and more constrict the field from which private practitioners gain their patients. They offer as a remedy the regulation of gratuitous medical attendance, the awakening of interest in rural medical practice, the extension of social insurance to the villages, limitation of the number of physicians who may settle in towns and cities, the extermination of illegal practice, the prohibition of advertising by charlatans in the newspapers, and the augmentation of the number of physicians employed in hospitals.

After the conclusion of the work of the congress, members of the association visited the Central Clinic for Mental and Nervous Patients, which is under the direction of Professor Tomescu, president of the congress. The results of treatment were shown on an instructive film. After the inspection of the clinic, Professor Tomescu entertained the members.

The Late John D. Rockefeller

All medical journals in Rumania have printed editorials on the passing of John D. Rockefeller, expressing their deep feeling on his death. In one year the Rockefeller Foundation granted about 30,000,000 lei for the promotion of health institutes in Rumania. With this sum, a malaria station has been built and equipped in the most modern way, the school for nurses in Cluj was enlarged by several new groups of buildings, laboratories were established, and the Social Rumanian Institute was built. Funds were allotted to the Bucharest Demographic Institute, the Bucharest Institute of Hygiene and the Central Sanitary Institute. Even more recently the Rockefeller Foundation granted money for the erection of an institute in Jassy for the study of scarlatina.

Marriages

ANTHONY MILES PERNETTI, Paterson, N. J., to Miss Louise Joan Cerabone of La Grangeville, N. Y., at Sylvan Lake, N. Y., July 29.

KENNETH COSTICH, Rochester, N. Y., to Miss Margaret Camilla Kirkland of Durham, N. C., June 14.

EDWIN EMMONS CORCORAN, Lancaster, S. C., to Miss Dorothy Rowe Lucas of Charleston, June 5.

ROBERT WESLEY BRANDON JR., Martin, Tenn., to Miss Mary Frances Harris of Memphis, in March.

JON ATHALSTEINN EILDFELL to Miss M. Meech, both of Winnipeg, Manit., Canada, July 10.

ELMER SHERMAN ALLEN JR., Arcola, Ill., to Miss Jane Chloe Jarman in Oklahoma City, in June.

FRED J. CARLSTROM to Miss Myrtle Heim Puckel, both of Rockford, Ill., in June.

LEONE MARION COTTRELL to Mr. Charles Henry Birdsall, both of New York, June 26.

EARLE M. CHAPMAN, Boston, to Miss Virginia M. Gies of Detroit, May 29.

WILLIAM H. ALTIER to Miss Pauline Kerr, both of Fowler, Ind., June 23.

Deaths

Joseph Augustus Blake, Litchfield, Conn.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889; assistant demonstrator in anatomy in 1891, instructor in surgery in 1900 and professor of surgery, 1903-1913, at his alma mater; member of the American Surgical Association, Society of Clinical Surgery and the American Association of Anatomists; fellow of the American College of Surgeons; corresponding member, Société de Chirurgie, Paris; surgeon to the American Ambulance, Neuilly, France, August 1914-October 1915; head of the British base hospital at Ris Orangis, October 1915-March 1917, the American Red Cross Hospital in Paris, April-Oct. 31, 1917; appointed commanding officer and surgeon in chief to the American Red Cross Military Hospital, number 2, Paris; major in the medical reserve corps in 1917 and in 1918 was made a colonel in the medical corps of the U. S. Army; in 1917 was decorated by the Legion of Honor of France and in 1922 was made an officer; in 1919 received the Distinguished Service Medal; consulting surgeon to St. Luke's, Roosevelt, New York Orthopedic, Beekman Street and Presbyterian hospitals, New York, St. John's Riverside Hospital, Yonkers and Tarrytown (N. Y.) Hospital; on the editorial board of the *American Journal of Surgery*, from July 1926 to December 1927; aged 72; died, August 12, of cerebral hemorrhage.

Judson Daland ✱ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1882; formerly professor of clinical medicine at his alma mater; emeritus professor of medicine at the Medical Chirurgical College, Graduate School of Medicine, University of Pennsylvania; fellow of the American College of Physicians; member and past president of the American Clinical and Climatological Association; president of the Philadelphia Institute of Medical Research; surgeon with rank of lieutenant commander in the Naval Coast Defense Reserve in 1917; editor of *International Clinics*, 1891-1899; consulting physician to the Jewish and Misericordia hospitals and the Norristown (Pa.) State Hospital; aged 77; died, August 14, in Ventnor, N. J.

Henry Louis Hilgartner ✱ Austin, Texas; University of Maryland School of Medicine, Baltimore, 1889; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; on the staffs of the Texas Deaf, Dumb and Blind Institute, Brackenridge and St. David's hospitals and the Seton Infirmary; consulting eye, ear, nose and throat surgeon and examiner, U. S. School for Aeronautics, during the World War; aged 68; died, June 9, in Atlantic City, N. J., of coronary occlusion.

Max Lyon Folk ✱ Chicago; Chicago College of Medicine and Surgery, 1917; assistant professor of ophthalmology at the University of Illinois College of Medicine; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; served during the World War; attending ophthalmologist to the Michael Reese Hospital and Research and Educational Hospital of the University of Illinois; aged 47; died, June 7, of adenocarcinoma of the stomach.

Ernest Ustick Buckman ✱ Wilkes-Barre, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1892; member of the American Academy of Ophthalmology and Oto-Laryngology and the American Otological Society; fellow of the American College of Surgeons; past president of the Luzerne County Medical Society; member and past president of the board of directors of the Wilkes-Barre General Hospital; aged 73; died, June 1, of coronary thrombosis and arteriosclerosis.

Burton Wilson Mack, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; member of the Illinois State Medical Society; fellow of the American College of Surgeons; assistant clinical professor of surgery, Loyola University School of Medicine; on the staff of St. Anne's Hospital; aged 66; died, June 7, at his home in Oak Park, Ill., of carcinoma of the prostate.

Earl Bertrand Sweet, Los Angeles; University of Pennsylvania Department of Medicine, Philadelphia, 1898; member of the California Medical Association; fellow of the American College of Physicians; served during the World War; on the staff of the Los Angeles General Hospital; aged 62; died, May 22, of carcinoma of the colon and bronchopneumonia.

Julius Joseph Leyko ✱ Baltimore; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1927; fellow of the American College of

Surgeons; instructor in surgery at his alma mater; on the staff of the Mercy Hospital; aged 33; died suddenly, June 8, of an accidental overdose of sodium amytal.

Herman William Froehlich ✱ Minneapolis; Minneapolis College of Physicians and Surgeons, 1906; fellow of the American College of Surgeons; member of the staff of St. Barnabas and St. Andrew's hospitals; was a trustee of the Concordia College, St. Paul; aged 57; died, June 14, of coronary occlusion.

Joseph Patrick Burns ✱ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1906; served during the World War; formerly on the staffs of St. Vincent's and St. Agnes' hospitals; aged 76; died, June 4, in the Misericordia Hospital of traumatic shock, due to a fall.

Harry Garland Timbres, Media, Pa.; Johns Hopkins University School of Medicine, Baltimore, 1928; at one time assistant in biostatistics at Johns Hopkins University School of Hygiene and Public Health; aged 38; died, May 12, of typhus, while at Marbumstroy, near Kazan, Russia.

Edward Joseph Morris, Brooklyn; University and Bellevue Hospital Medical College, 1899; fellow of the American College of Surgeons; served during the World War; aged 66; gynecologist and obstetrician to the Holy Family Hospital, where he died, May 23, of coronary thrombosis.

Charles Fuller Quinn, Cherokee, Iowa; Sioux City College of Medicine, 1896; member of the Iowa State Medical Society; county coroner and city health officer; aged 78; on the staff of the Sioux Valley Hospital, where he died, June 8, of carcinoma of the stomach and pancreas.

William James Fleming, West Allis, Wis.; Marquette University School of Medicine, Milwaukee, 1916; member of the State Medical Society of Wisconsin; served during the World War; aged 48; died, June 4, of cerebral hemorrhage and essential hypertension.

Frank Aloysius Conlon ✱ Lawrence, Mass.; Harvard University Medical School, Boston, 1904; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; aged 56; died, June 23, of acute coronary occlusion.

Walter William Peck, Darlington, Wis.; Rush Medical College, Chicago, 1883; past president and secretary of the Lafayette County Medical Society; at one time mayor, and president of the school board; aged 77; died, June 13, of acute dilatation of the heart.

James McElroy Fetterman ✱ Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1900; staff psychologist for the board of education; aged 62; died, June 1, in the Homeopathic Hospital, of perforation of the common bile duct with biliary abscess.

John Alfred Workman ✱ P. A. S., Lieut., U. S. Navy; Hahnemann Medical College and Hospital of Philadelphia, 1930; entered the navy in 1930; aged 31; was drowned when he was lost at sea from the S. S. *President Polk*, April 3, near Honolulu, Hawaii.

William A. Swope, Wheeling, Mo.; University of Louisville (Ky.) Medical Department, 1885; aged 76; formerly on the staff of the Chillicothe (Mo.) Hospital, where he died, May 24, of heart disease, as he was preparing a patient for an operation.

John Clark Jones, Brookline, Mass.; Rush Medical College, Chicago, 1881; Bellevue Hospital Medical College, New York, 1882; Harvard University Medical School, Boston, 1895; member of the Massachusetts Medical Society; aged 80; died, June 17.

Charles Howard Jameson ✱ Hays, Kan.; Washington University School of Medicine, St. Louis, 1907; fellow of the American College of Surgeons; on the staff of St. Anthony's Hospital; aged 50; died, June 14, of acute dilatation of the heart.

Thomas Enoch Steen, Florence, Miss.; University of Nashville (Tenn.) Medical Department, 1911; member of the Mississippi State Medical Association; aged 65; died, May 27, in a hospital at Jackson, of epithelioma of the mouth.

Frank S. Morris ✱ McCool Junction, Neb.; Medical College of Indiana, Indianapolis, 1887; for many years a member and at one time president of the board of education; aged 71; died, May 1, of pneumonia and arteriosclerosis.

Ronald Corbin Gyles, Siler City, N. C.; Jefferson Medical College of Philadelphia, 1917; served during the World War; formerly health officer of Edgecombe County; aged 43; died suddenly, June 19, of coronary thrombosis.

George Fred Lewis, Newton, Mass.; Bellevue Hospital Medical College, New York, 1886; formerly medical inspector in the school department and later member of the school committee of New Bedford; aged 77; died, June 15.

Bayard Taylor Stevenson ✱ Harvey, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; on the staff of the Ingalls Memorial Hospital; aged 64; died, May 29.

Charles Adam Laubach ✱ Norristown, Pa.; Johns Hopkins University School of Medicine, Baltimore, 1913; aged 49; on the staff of the Norristown State Hospital, where he died suddenly, June 20, of coronary thrombosis.

Robert Liston Irish, New York; University and Bellevue Hospital Medical College, New York, 1899; member of the Medical Society of the State of New York; aged 69; died, June 6, in the Reconstruction Hospital.

Daniel Thomas Sullivan, Mansfield, Mass.; Bellevue Hospital Medical College, New York, 1896; member of the Massachusetts Medical Society; for many years school physician; aged 66; died, May 27, of myocarditis.

Nellie Ettie Kurtz, Buffalo; University of Buffalo School of Medicine, 1910; member of the Medical Society of the State of New York; aged 52; died, June 20, of coronary thrombosis and diabetes mellitus.

Roger Ralph Olsen ✱ A. Surg., Lieut. (j. g.) U. S. Navy; University of Illinois College of Medicine, Chicago, 1932; aged 30; hanged himself, May 2, while a patient in a hospital at Washington, D. C.

John Thomson, Syracuse, Neb.; Trinity Medical College, Toronto, Ont., Canada, 1902; aged 66; died, May 23, in St. Mary's Hospital, Nebraska City, of pernicious anemia and chronic nephritis.

Robert Hazlett Cummings Phillips ✱ Trenton, N. J.; Jefferson Medical College of Philadelphia, 1896; on the staff of the Mercer Hospital; aged 71; died, May 10, of carcinoma of the rectum.

O. W. Statham, Leesburg, Ga.; Baltimore Medical College, 1895; chairman of the county board of education; aged 65; died, May 19, in the Phoebe Putney Hospital, Albany, of Brill's typhus fever.

Frederick Porter Hammond ✱ New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889; aged 71; was killed, June 3, by a trolley car.

Foye R. Troute ✱ Denver; Ohio State University College of Medicine, 1917; served during the World War; aged 46; died May 27 in Englewood, Colo., of pulmonary tuberculosis.

Melvin James Brown, Mars Hills, Maine; Baltimore Medical College, 1896; member of the Maine Medical Association; aged 83; died, June 16, of arteriosclerotic heart disease.

Gordon Edward Stanley, Hazelton, B. C., Canada; University of Alberta Faculty of Medicine, Edmonton, 1934; on the staff of the Hazelton Hospital; aged 31; died, May 24.

David William Trout, Stockport, Ohio; Ohio Medical University, Columbus, 1901; member of the Ohio State Medical Association; aged 62; was found murdered, May 19.

Frank Malcolm Child, Teaneck, N. J.; University of Vermont College of Medicine, Burlington, 1894; aged 67; died, June 21, of chronic myocarditis and arteriosclerosis.

Charles Rodman Townsend, Bridgeport, Conn.; Albany (N. Y.) Medical College, 1895; aged 64; died, May 27, of pulmonary tuberculosis and diabetes mellitus.

Carlton A. Smith, Oklahoma City; Kansas Medical College, Medical Department of Washburn College, Topeka, 1903; also a druggist; aged 65; died, May 3.

Alois Anthony Thuner ✱ Point Loma, Calif.; Detroit Medical College, 1879; member of the Michigan State Medical Society; aged 79; died, May 24.

Edward V. Brown, Woodstock, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1888; aged 81; died, June 4, of chronic myocarditis.

Frank Woolford Finley, Williamsburg, Ky.; University of Louisville Medical Department, 1892; aged 74; died, June 11, of heart disease.

Rufus Moos Wallace, Corryton, Tenn.; University of Louisville (Ky.) Medical Department, 1887; aged 80; died, May 15.

William Alvy Jones, Wildie, Ky.; Louisville and Hospital Medical College, 1908; aged 50; died, June 7, of heart disease.

Herbert Maw, Caledonia, Ont., Canada; Trinity Medical College, Toronto, 1897; died, May 26.

William Thomason, Olyphant, Ark. (licensed in Arkansas in 1903); aged 73; died, in May.

Bureau of Investigation

MOONE'S EMERALD OIL

President of International Laboratories Fined as Shipper of Worthless Varicose Vein Treatment

The United States Department of Agriculture, in a release dated July 29, 1937, reporting terminations of criminal actions under the Federal Food and Drugs Act against some seventeen medicine manufacturers, states that the largest fine was paid by Fred W. Clements and the International Laboratories, Inc., of Rochester, N. Y., shippers of "Moone's Emerald Oil."

According to a commercial report, the officers of International Laboratories, Inc., consist of Frederick W. Clements, president; Miss Daisy E. Clements, a sister, vice president and assistant treasurer, and a William Blamire, secretary and treasurer. According to the same report, Clements is treasurer and manager of W. H. Buckley, Inc., manufacturers of proprietary medicines, Rochester, N. Y. He is also president and treasurer of E. Griffith Hughes, Inc., of Rochester, distributors of "Kruschen Salts" (THE JOURNAL, Nov. 21, 1931, p. 1555), a one-third stockholder and official of the Scobell Chemical Company, and a partner in the Johnstone Advertising & Sales Company.

Clements was reported to have been at one time connected with the Moone Chemical Company of Rochester, N. Y., which concern in 1916 was putting out an Emerald Oil "for external use" and claiming that the product was "made famous through its power to exterminate pus germs and eliminate their poisons; destroy odors arising from ulcers, gangrene, cancers; relieve pain and assist Nature in restoring health to the parts." It was claimed to have been "used extensively for pains, inflammations, swellings, neuralgias, bites, bruises, burns, scalds, chilblains, pimples, sore throats, goiters, tubercular glands, boils, abscesses, carbuncles, ulcers, felons, fissures, fistula, piles, ingrowing toe nails, gangrene, cancers, catarrhs and other discharges."

On July 12, 1916, the United States attorney for the Western District of New York, acting on a report by the Secretary of Agriculture, filed in the District Federal Court an information against the Moone Chemical Company, a corporation, Rochester, N. Y., alleging shipment by the company, in violation of the Food and Drugs Act as amended, of a quantity of Emerald Oil that was misbranded. It was alleged in substance in the information that the article was misbranded for the reason that the label bore false and fraudulent statements. On Nov. 20, 1917, the defendant company entered a plea of guilty to the information, and the court imposed a fine of $25.

Moone's Emerald Oil has been extensively advertised in various newspapers under such catch headings as "Reduce Those Dangerous Swollen Veins," "How to Reduce Varicose Veins," "Here's Speedy Relief From Bunions and Soft Corns." The nostrum has also been held out to the public as ". . . wonderful for ulcers, old sores, broken veins and troublesome cases of eczema." In 1929 the International Laboratories was advocating Moone's Emerald Oil as a "marvelous antiseptic . . . it destroys germs and poisons caused by germs, is such a remarkable healing agent that eczema, barbers' itch, salt rheum and other inflammatory skin eruptions go in a few days. For years it has been used for boils, ulcers, abscesses and open sores that discharge and with the most perfect success." This remarkable remedy was claimed to be a "Surgeon's Prescription" and to have "astonished physicians." There is no doubt that physicians would have been astonished to find varicose veins and eczema yielding to "a green-colored mixture of mineral oil with camphor, wintergreen and carbolic acid," which the Food and Drug Administration reported the nostrum to contain.

The painful experiences of two women who accepted the Moone's Emerald Oil advertising copy as truthworthy have been reported to the Bureau of Investigation by the attending physicians. In 1934 a New Jersey physician wrote:

> "Recently I had a case of dermatitis venenata in a young woman who rubbed Moone's Emerald Oil into the skin of her feet. The skin reaction was similar to that of poison ivy."

In 1935 a New York physician informed the Bureau:

> "One of my patients, having read same [Moone's Emerald Oil advertisements], was thus induced to buy a bottle of this alleged cure and, after applying same in accordance with directions, she was obliged to go to bed because of the tremendous swelling in one of her legs and the appearance of an eruption on the areas where the oil was applied. Subsequently both her legs became swollen, the skin became indurated, brawny in appearance, and showed an extensive hemorrhagic eruption. The hemorrhagic eruption was diffused over an area extending from the ankles up to the knees. A few days later the entire body became involved. There appeared a papular and macular eruption, some of which became confluent, forming large blotches. Because of the itching and burning sensation, the patient became very nervous, exhibiting chilly tremors, and had to be confined to bed for about ten days."

Although Clements, president of the firm, had pleaded not guilty to the government's charge in the recent prosecution that

Here's Speedy Relief From Bunions and Soft Corns
Druggists Say Emerald Oil Must Give Complete Satisfaction or Money Cheerfully Refunded
MOONE'S EMERALD OIL
Ready Relief in 7 Days or Less
BAD LEGS
98c

the oil was neither germicidal nor a treatment for the disease conditions named in the labeling, the government's allegation that the product was worthless for the conditions advocated was upheld by the jury finding of guilt.

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Red Cross Pills.—Red Cross Chemical Co., Inc., Fall River, Mass. Composition: Essentially ferrous carbonate, arsenic and manganese compounds, potassium sulfate, and plant extracts including strychnine and aloin. For anemia, kidney and bladder troubles, impure blood, etc. Fraudulent therapeutic claims.—[*N. J. 24116; November, 1935.*]

WTC Anti-Pollen Salve.—Corn Chemical Co., Cleveland, Tenn. Composition: Essentially aluminum chloride (2.1 per cent) in a mixture of petrolatum and wool fat. For hay fever. Fraudulent therapeutic claims.—[*N. J. 24092; November, 1935.*]

Fink's Magic Oil.—H. G. G. Fink Laboratories, Cincinnati. Composition: Essentially water, alcohol (48.1 per cent) and small amounts of essential oils, including cinnamon, wintergreen and sassafras. For rheumatism, cholera morbus, fever, etc. Fraudulent therapeutic claims.—[*N. J. 24106; November, 1935.*]

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

AFTER-CARE OF POLIOMYELITIS

To the Editor:—I have been unable to find specific and detailed instructions in carrying out the care of paralysis following the acute attack of poliomyelitis. I will appreciate your sending me detailed information as to the best procedures to follow in a case of deltoid paralysis and paralysis of the flexor muscles of the foot. I should like information on these points: How to use the electric stimulation and galvanic currents in the muscle care; how often this should be done; how much active and passive motion is indicated; whether the arm should be kept elevated or allowed to remain in a sling; advisability of swimming and of how much benefit it is. Any further instructions you may have as to the care of these muscles will be appreciated.

M.D., Texas.

ANSWER.—The after-care of paralysis resulting from acute poliomyelitis requires prolonged and intelligent supervision based on an accurate knowledge of the muscles involved. In the past, many diverse systems have been employed. Opinion now is more crystallized, variations being introduced only to favor paralyzed muscles. There have been several articles by competent authors in the past few years in the *American Journal of Physiotherapy* on the management in the recovery stage of this disease.

Orthopedic after-care begins the moment muscle weakness or paralysis is detected. At this time the extremities should be splinted in a position to relax most of the muscles. In the event of partial paralysis of a member, the position should favor the weakened muscles. The patient should remain in bed, resting on a firm mattress. In the upper extremity the arm should be kept abducted nearly to right angles on the chest, and in a neutral position as regards rotation at the shoulder, i. e., the forearm should be placed in the frontal plane. The position of the elbow depends on the relative strength of the flexors (biceps and brachioradialis) and the triceps extensor. If the latter is extremely weak, extension should be favored. The forearm should lack one third of full supination when extensive paralysis is present there. Special attention should be directed at an accurate analysis of wrist, thumb and hand palsy, as much damage has been done in the past to the small muscles of the hand by lack of support. Usually the thumb should be splinted across the palm to relax the opponens pollicis and the adductor pollicis. Flexion at the metacarpophalangeal joints of about 30 degrees should be maintained unless a contraindication is present.

The pelvis should be prevented from sagging by suitable support in bed, while the legs are maintained in from 10 to 15 degrees abduction at the hips, slight flexion at the knees, and with the feet at right angles to the legs, special attention being paid to the prevention of foot drop. In the event of focal weakness, as of the calf muscles, such groups should always be favored by relaxation. A strictly convalescent status without active care except general nursing and positional care should be maintained as long as any muscle tenderness remains. The extremities should be removed daily from support for bathing and slight daily passive motion at the major joints to prevent fixation from prolonged immobilization. Even then meticulous care should be taken to avoid rough handling. The physician should always be on the alert for contractures. These often develop rapidly, but such deformities are preventable if vigorously combated. When tenderness is gone, carefully planned graded active exercise is begun with the aid of water to provide buoyancy or a glazed or polished surface to reduce friction. There are no virtues inherent in either, except that the use of water at a suitable temperature (90-95 F.) is most pleasing to the patient and enables exercise to be carried out with the minimum of effort. The types of exercises to be prescribed cannot be listed in so brief a space. Such textbooks as C. L. Lowman's "Technique of Underwater Gymnastic's" (American Publications, Inc., Los Angeles, $5) can be consulted. It is wise to employ an orthopedic surgeon at least in a consulting capacity to supervise the care of every case of poliomyelitis, as the specific care to be given depends on the examination of muscles and judgment as to how much active exercise the patient should have each day. The slightest fatigue should be carefully avoided.

In a few weeks after the acute stage, if paralysis remains only in an upper extremity, the patient can be allowed out of bed with the paralyzed upper extremity supported on an airplane or platform splint. If the residual paralysis is in the lower extremity, extreme caution should be taken against allowing the patient to walk too soon. Braces should always be supplied when indicated. Recovery may be complete in a few weeks or months, but in many instances it may extend over two or three years. The experienced orthopedic surgeon can usually give a reliable prognosis at the end of a year if paralysis remains at that time, provided he is in possession of data concerning progress during that year.

Answering specifically, in the instances in which deltoid paralysis alone remained, such an extremity should be supported indefinitely on an airplane brace. Active exercises for this case should aim at strengthening any function detectable in the weak or paralyzed deltoid. These are best done with the patient in a recumbent position on a smooth table top or in a semirecumbent position in a moderate sized tank. Paralysis of the "flexor muscles of the foot" indicate that there is calf group and other paralyses in addition to the paralysis mentioned. An accurate estimation of the muscle strength should be made and the foot carefully splinted in the light of knowledge so gained. If the calf group is paralyzed with normal dorsal flexors, the foot is best supported in moderate equinus by a plaster splint with special attention that the arch is molded carefully and contraction of the plantar fascia avoided by some moderate dorsal pressure on the foot (as by web straps applied loosely). Exercises in this case can be easily given in a bath tub at home.

All electrical stimulation, including galvanic and faradic applications, to muscles or to nerves should be avoided. Rest in the optimal position and carefully graded active motion, protecting poorly functioning or paralyzed muscles from fatigue and stretching are the two important therapeutic agents used in the recovery phase of this disease. Passive motion should not be used except in minor degree to prevent fixation of joints. Swimming or other hydrotherapy should be used only as part of the program of active exercise and should be carefully supervised. In the two cases mentioned, a cautious start should probably be made at this time on a program of active exercise.

TRANSMISSION OF POISON IVY

To the Editor:—The question has recently arisen in a compensation case as to whether or not poison ivy infection might be transmitted to a person exposed to the smoke from a fire in which poison ivy plants were being burned.

M.D., Washington, D. C.

ANSWER.—The active ingredient of all the Rhus species is toxicodendron, a phenolic oily resin, contained in the sticky sap of the plant. While this is not volatile, it may be conveyed for some distance on the soot of the smoke of a burning plant and produce typical lesions of poison ivy (Sollmann, Torald: A Manual of Pharmacology and Its Application to Therapeutics and Toxicology, Philadelphia, W. B. Saunders Company, 1936, p. 306).

LYMPHEDEMA OF LEG

To the Editor:—I have under my care at present a woman, aged 40, with refractory lymphedema of the left leg. The case is of ten years' duration and, despite all attempts to increase the lymphatic return, the edema persists. It is probably of nonfilarial origin, the patient never having lived in a tropical zone. Southey's tubes have even been resorted to with only temporary relief, the condition recurring shortly afterward. There is associated a mild parenchymatous nephritis with albuminuria and a few hyaline casts, with a mild hypertension. There is no retention of nonprotein nitrogen, however, or increase in urea or creatinine. I am writing to inquire as to the possible efficacy of salyrgan or mercupurin in this condition and whether there are any reports in the literature as to the use of these drugs in conditions of lymph stasis or elephantiasis. Attempts to discover a possible source of obstruction to the lymphatic return have failed, although abdominal exploration has not as yet been resorted to.

M.D., Illinois.

ANSWER.—There are two factors responsible for the swelling in lymphedema, one of which is accumulation of unusual amounts of lymph in the tissues and the other of which is actual hyperplasia, or overgrowth of connective tissue. If the patient is put to bed and the extremity elevated, in most cases of lymphedema marked reduction in the swelling occurs. This process is hurried occasionally by the use of diuretics, such as salyrgan; however, the swelling will almost certainly recur if the patient becomes active again unless an adequate type of bandage is applied. The best kind of bandage is a pure rubber one, 3 inches wide and 15 feet long. Ordinarily the bandage is applied over a lisle stocking, beginning by making two turns about the foot, two figure-of-eight turns about the ankle, and progressing up the extremity to the knee. The toes and part of the heel are left exposed. The bandage should be removed and applied in the same manner each time, as it becomes shaped to the extremity on repeated use. If it is applied too tightly, the toes become discolored, cold and numb. If it is applied

too loosely, edema results. Patients soon become adept at bandaging their legs efficiently. The bandage should be removed at midday and reapplied over a dry stocking after the patient has rested for an hour. The same procedure is repeated at night if the patient is active. If he remains home, he may remove the bandage and elevate the leg while sitting. Patients object to wearing the bandages because of the inconvenience in applying them repeatedly, the slight discomfort, and their unsightly appearance. This is particularly true of women, who object to the appearance of the bandaged limb. Frequently a well fitting elastic stocking may be used for "dress" occasions and the use of the heavier rubber bandage may be reserved for ordinary activity. It is well to point out to women that the lymphedematous leg has an abnormal appearance which the bandage increases but little, and to emphasize that uncontrolled edema almost invariably causes a gradual increase in the size of the limb. It is impossible to say how long the bandage should be worn; in some instances it must be used indefinitely; in others, improvement in circulation of the lymph may occur. Once every month or so the bandage can be left off for a day as a trial. If edema reappears, the support must be worn again.

In many instances in which there is marked increase in the size of the limb, surgical treatment is beneficial. The modified Kondoleon operation decreases the size of the limb by removal of hyperplastic tissue and dilated lymph spaces. In a recent survey of sixty-four cases of lymphedema in which surgical treatment of this kind was used, there was improvement of varying degree in forty-one cases. The etiology, classification, and treatment of lymphedema were considered in detail in the *Annals of Internal Medicine* 9:516 (Nov.) 1935.

TREATMENT OF ENDARTERITIS OBLITERANS

To the Editor:—Will you please tell me what is considered the best treatment for endarteritis obliterans for a man 63 years of age? Would negative and positive pressure be indicated?

H. W. NYE, M.D., Osborne, Kan.

ANSWER.—The condition is better known as arteriosclerosis obliterans. The term endarteritis obliterans has been discarded for the condition characterized by arteriosclerosis with occlusion of the peripheral arteries, since the term "endarteritis" indicates inflammation, which is absent in most cases of arteriosclerosis. Since this condition is a chronic one, treatment must be carried out over a long period. When the blood supply of the feet is greatly diminished or when there is ulceration or gangrene, rest in bed is important, since walking may cause injury to the tissues to which the blood supply has been impaired. Smoking should be discontinued, since this causes vasoconstriction and contributes to the impairment of the circulation. Careful protection of the feet from injury of all kinds is important. The patient should do everything possible to avoid crushing and bruising the feet and toes, scratches, cuts, skin cracks, blisters, burns and frost bites. Only shoes that are comfortable and that do not bind or rub should be worn. Felt and wool lined shoes and soft woolen stockings should be worn in cold weather. Toenails should be cut straight across after soaking in warm water and should be carefully cleaned with orangewood sticks. Corns, calluses and bunions should not be cut. If any chiropody is done, the chiropodist should be advised that the circulation is impaired. The removal of ingrown toenails and minor operations on the toes should be avoided, as such procedures commonly precipitate gangrene. The feet should be washed carefully and gently at least every two or three days with mild soap and warm water, and 50 per cent alcohol should be applied after careful drying. If the skin of the feet is excessively dry and tends to crack or scale, hydrous wool fat and oil of theobroma may be used. Iodine, merthiolate, sulfonaphthol, phenol (carbolic acid), cresol, preparations of saponated solution of cresol, carbolated petrolatum and similar preparations should not be applied to the feet, since they may cause death of the tissue. Trichophytosis should be sought for and treated if present. However, ordinary preparations used in the treatment of this condition may be strong enough to cause ulceration. A safe method of treatment is to soak the feet in a 1:8,000 solution of potassium permanganate. If infection is present in ulcers or gangrene, the feet should be soaked in mild antiseptic solutions such as mild solutions of boric acid and preparations containing chlorine. A 10 per cent zinc peroxide salve or allantoin ointment may aid in cleaning up gangrenous areas. Epithelization may be stimulated by a solution of thioglycerol. Postural exercises or treatment on the oscillating bed may help to develop collateral circulation; the former is carried out by lying on the back and elevating the feet to a vertical position until they become blanched and then sitting on the edge of the bed with the feet hanging down until they become normal in color or excessively red. These procedures should be repeated a total of fifteen or twenty minutes three times daily. Contrast baths may likewise be of value. Two containers are used, each of which is large enough to immerse both feet to the midleg. In one is cold water (40 F.) and in the other warm water (about 105 F.). The feet are immersed for one minute alternately in the water of each container for periods of fifteen minutes two or three times daily. It is well to have a baker or a light cradle over the foot of the bed to see that the environmental temperature is elevated above that of the room, but it should not exceed 105 F. Electric pads or hot water bottles applied directly to the skin should never be used. Intermittent pressure and suction may be of value and should be used at a minimum of two or three hours daily over a considerable period.

DIFFICULTY WITH SPEECH AND HEARING DEVICES

To the Editor:—A boy, now 6½ years of age, is well developed and well nourished but is unable to talk and does not cooperate with his parents and attendants. The child was delivered normally without any history of obstetric injury, sat up at 7 months, walked at 14 months and had his first teeth at 7 months. From the beginning the parents noticed that he did not understand when he was addressed. However, during the first year of life he seemed to be able to utter a few noises as babies usually do. During the second year of life when the child was unable to learn how to talk and became hard to manage, the parents became disturbed. However, they thought that he was a little backward in learning and they were not particularly greatly disturbed, as the pediatrician who took care of the child told them that he was backward and that in time he would learn like the rest. About the third year when the child did not talk and he forgot the sounds that he had learned, the parents again became alarmed and since have had him to many specialists and clinics. Two years ago he was taken to a well known clinic, where a complete examination was done. I will repeat the most important observations. The hemoglobin was 14.1 Gm. per hundred cubic centimeters, the red cell count 4,360,000, leukocytes 8,800. Tests for syphilis were negative. Roentgenograms of the head and chest and the Mantoux test were negative. Examination of the spinal fluid taken at the time of encephalography gave a negative Wassermann reaction. Nonne's test was negative. The protein content was 30 mg. and the colloidal benzoin test was negative. The encephalograms disclosed nothing abnormal. An intelligence test could not be successfully made. The impression of the clinic was that the underlying aphasia must be a partial basis for the child's failure in development and that the striking disturbance in his behavior was partly reactive to his disorder of speech, partly to his environment and possibly partly to disorder in its own name. At the advice of the clinic the child was placed in a well known school in Kansas which makes a specialty of treating cases of this kind. The child was kept there for almost a year without apparently any improvement in his speech. He is well developed, normal, healthy, and at times appears very intelligent. After the year was up the child was taken home because of lack of speech development and was placed in a school here in the city which specializes in the care of backward children. The child has made slight improvement since he has been at home and attending school. Recently he was taken to an ear, nose and throat specialist for examination and test for hearing. The examination disclosed that his sense of hearing is markedly impaired. Therefore, the question comes up whether the child's condition is entirely due to faulty hearing. However, it seems rather strange that one of the best clinics in the country and a school that particularly specializes in the care of backward children had not informed us of this condition before. If we assume that the child's condition is due to hearing deficiency, what kind of a mechanical device would you recommend, since there are so many on the market? Do you think that such a device will help his hearing and further his development?

L. M. SHAPIRO, M.D., Kansas City, Mo.

ANSWER.—First of all it should be positively ascertained whether the child is so deaf that he cannot hear what people say. If so, it may be only a case of ordinary deaf-mutism. If not, it is most likely a case of agenesis of the speech centers, since there is no reason to suspect birth injury or any brain disease that may have affected the speech center. We would not advise any mechanical device except after consultation with an otologist. The devices accepted by the Council on Physical Therapy are the acousticon, the audiphone, the radio ear and the sonotone.

NEUROCIRCULATORY ASTHENIA

To the Editor:—Please let me know if you have any information on a case of neuro-asthenia in a youth aged 16, weighing 172 pounds (78 Kg.) and 5 feet 9 inches (175 cm.) in height. Schilling's count reveals basophils 0.0, eosinophils 1.0, myelocytes 0.0, juveniles 7.0, staphylocytes 66, segmented nuclears 8, lymphocytes 8 and large mononuclears 8. The white blood cells number 8,500 and the red blood cells 5,320,000. The basal metabolism is 7 plus. The urine is normal, with only a trace of albumin. The patient is hemophilic; he faints and passes out very easily.

GUSTAVE E. JACOBS, M.D., St. Louis.

ANSWER.—The diagnosis of neuro-asthenia is an unfamiliar one. Grasping as a clue the statement that the patient "faints and passes out very easily," it is assumed that this young man suffers from neurocirculatory asthenia, or the effort syndrome.

From the meager information given it would seem that the patient is in good physical condition. The Schilling count with its relative lymphopenia and rather high number of juvenile cells is not indicative in the presence of a normal total white count. There is no specific therapy for the effort syndrome. The treatment consists of good mental and physical management with the avoidance of drugs.

If the patient is a true hemophiliac it is something apart from the effort syndrome and should be considered as a separate problem. If he has merely a prolonged coagulation time it is probably unnecessary to do anything about it.

TOXIC HEPATITIS AFTER DINITROPHENOL

To the Editor:—Is there any helpful treatment for ascites resulting from degeneration of the liver brought on by the use of antifat treatment, dinitrophenol? I have a patient 20 years of age who had an exploratory operation leading to the diagnosis of cancer. The surgeon prognosed her demise in six weeks, which period now has extended to more than twice that. She has been tapped about every ten days and relieved of about 6 quarts of fluid each time.

M.D., Nebraska.

ANSWER.—Toxic hepatitis, or hepatic cirrhosis with portal decompensation, especially the latter, is an infrequent form of dinitrophenol poisoning. The former usually resolves when the drug is withdrawn, in addition to the use of a high carbohydrate, low fat diet and a daily saline aperient. Exclusive of syphilitic cirrhosis, there is no specific treatment for hepatic cirrhosis with ascites, from whatever cause, with the exception of the withdrawal of the particular hepatotoxin, such as alcohol, arsenic or cinchophen. In this case the usual high carbohydrate, low fat and low salt regimen is indicated. Fluid should be restricted to 1,000 cc. daily for the time being. Satisfactory diuresis can be obtained by the use of salyrgan and potassium nitrate, so that further paracentesis may be unnecessary. If there are no contraindications of a renal nature, half of a 1 cc. ampule of salyrgan is given intramuscularly as an initial dose. If there are no untoward effects, the drug may be given in 1 cc. doses thrice weekly. A maximum of 2 cc. has been given at one time. As much as from 4 to 10 Gm. of potassium nitrate may be administered daily. It is marketed in the form of enteric coated tablets of 7½ grains (0.5 Gm.) each. If adequate diuresis is not obtained by this procedure after a trial of from seven to ten days, one must resort to occasional paracentesis and the administration of 10 per cent dextrose solution by phleboclysis. A tendency to acidosis may be combated by phleboclysis of 500 cc. of 5 per cent sodium bicarbonate solution.

EFFECTS OF SODIUM PERBORATE ON TEETH AND GUMS

To the Editor:—An article appearing in the May issue of *Hygeia*, page 398, states that sodium perborate causes gingival manifestations such as pyorrhea. Is this so?

F. D. THOMPSON, M.D., Chicago.

ANSWER.—The increased number of injurious burns of the oral mucosae from the indiscriminate use of sodium perborate has led to serious misgivings concerning the use of drugs or of dentifrices containing it. The demand has been created largely no doubt by radio advertising.

The Council on Dental Therapeutics in its book Accepted Dental Remedies recognizes the use of sodium perborate for the treatment of Vincent's infection and related conditions. Such use is quite different from the ill advised use as a dentifrice or mouth wash as a supposed preventive for mouth diseases. The use of this drug as a mouth wash, a dentifrice, a bleach for the teeth or as an oral hygiene agent and as a preventive of "pyorrhea" and trench mouth without individual attention by a qualified dentist or physician is against the public interest.

Sodium perborate was introduced about 1910 but until relatively recently its use was generally confined to sale on prescription. Few untoward incidents were noted, which may be explained by its circumscribed use for relatively short periods and possibly to the directions for frequent rinsings of the mouth, a factor of some importance in the control of Vincent's infection. Following general advertising, particularly by the Vince Laboratories of New York, a number of cases of mouth burns were reported in the dental journals and by dentists.

When one considers the alkaline nature of the product and its widespread use, it is not surprising that undesired reactions began to be noted. Isadore Hirschfeld (*J. Am. Dental A.* **21**:776 [May] 1934) reported several cases of "chemical burns," hairy tongue and edema of the lips from the ill advised use of sodium perborate. Hirschfeld, who has had a wide experience in the treatment of periodontal disease, says: "The patient was influenced by an advertisement to use a certain preparation of sodium perborate for inflamed gums. The lining of the cheeks and lips became a heavy mass of necrotic tissue within a few days. After the perborate wash was discontinued, the burn healed rapidly. Although the solution used (1 tablespoon to the glass) is easily tolerated by the average person, clinical experience indicates that about 20 per cent of patients cannot use the drug stronger than a teaspoonful to three quarters of a glass of water without sustaining a burn of a greater or less degree." In view of these and other circumstances, the Council on Dental Therapeutics will not accept dentifrices that contain sodium perborate.

These reactions in the mouth are not unlike reactions on the skin. Dr. Leon Goldman (The Skin Reactions of Infants and Children to Soaps, in THE JOURNAL, April 17, 1937, p. 1317) notes that sodium perborate in a soap is the commonest eczematogenic agent. The patient with a contact dermatitis reacts more frequently to soap than the person with a normal skin.

It is not likely that sodium perborate will cause pyorrhea but it may cause gingival manifestations of the nature described. The danger rests in the possibility of secondary infection due to the inflammation of the tissues caused by the repeated application of an alkali-producing drug.

DIGITALIS THERAPY IN LACTATION

To the Editor:—Is there any contraindication to digitalis therapy for a mother who is nursing her child.

M.D., Pennsylvania.

ANSWER.—Excretion of digitalis into the milk of the mother has not been demonstrated and is most improbable on theoretical grounds. It becomes fixed in all body tissues, especially muscles and liver, and is broken down into the digitalis genins and glucosides and excreted as such. It is found in edema fluid. There is no contraindication to administering digitalis to the nursing mother when there is a definite indication for its use, as in auricular fibrillation and passive congestion. As a factor of safety, it would be well to keep the baby under close observation.

LIQUID PETROLATUM IN PERITONEAL CAVITY

To the Editor:—Will you please tell me what effect sterile liquid petrolatum will have, if any, when poured into the peritoneal cavity during operation? I have seen liquid petrolatum used for the purpose of preventing adhesions. Would it produce any inflammatory reaction in the peritoneum and might it actually produce adhesions? Could walled off globules of oil in the peritoneum produce a chronic irritation that might later result in malignant changes?

M.D., Georgia.

ANSWER.—When liquid petrolatum is placed in the peritoneal cavity it has a tendency to cause irritation. The pathologic picture is that of chylous-like fluid, fatty necrosis of the omentum, and foreign body reaction with subsequent fibrosis. In patients in whom this procedure has been used, the liquid petrolatum did not prevent adhesions but caused them. The symptoms produced were those of vague, sometimes severe, abdominal pains, necessitating laparotomy and the excision of these fibrotic masses, this being especially true of some segments of the omentum.

It has been shown experimentally that irradiated petrolatum has no appreciable bactericidal effect on aerobic or anaerobic organisms in vitro.

Whether or not walled off fat globules of oil in the peritoneum might later result in malignant changes is problematic, but it does not seem likely.

SENILE VAGINITIS

To the Editor:—Will you please outline the treatment for senile vaginitis?

JAMES P. TYE, M.D., Albany, Ga.

ANSWER.—The origin of this condition is to be found in local, nutritional or circulatory disturbances, atrophy of these parts resulting from the loss of ovarian function and advancing age. Local patches of raw surface appear where the vaginal epithelium has become denuded or cracked, and such surfaces readily adhere to one another.

The atrophic smoothness of the vagina and the narrowing of the introitus and canal are readily seen. The inflamed and also the denuded areas are visible, the granulating surfaces of the latter frequently oozing blood. Attempts at examination are painful, and vaginal adhesions are easily detected.

Cancerous changes may be present and a positive diagnosis to the contrary cannot always be made. Segments of tissue should be removed for histologic examination when one is in doubt.

The prognosis is generally poor. Some alleviation of the difficulty is always possible, but the process tends to be a progressive one especially if the patient is of advanced age.

For treatment, one may give douches once every day or two, using compound powder of zinc sulfate (the pulvis antisepticus

of the National Formulary V), 10 Gm. to 1,000 cc., or 2½ drachms to 1 quart of warm water. These are soothing and helpful.

Norman Miller recommends mildly antiseptic tampons (2 per cent mercurochrome with 10 per cent mild protein silver or 2 per cent phenolated glycerin) until the separated adhesions have healed and there is no longer any evidence of bleeding. The daily use of vaginal cones or capsules containing estrogen is helpful in certain instances.

DIPHTHERIA OF SKIN PRODUCING ABSCESSES

To the Editor:—A patient has multiple abscesses involving the muscles and fascia of the right thigh near the inguinal region, which are deeply penetrating, are highly offensive and slough profusely. The condition proved to be of diphtheric origin and was cured by a single injection of 10,000 units of diphtheria antitoxin. There was and never had been any throat involvement. Kindly let me know whether similar cases are recorded and whether such conditions are frequent in any part of the body.

E. Sheridan Roane, M.D., Richmond, Va.

Answer.—Diphtheria of the skin, while unusual today, was not of extremely rare occurrence formerly. It has been observed often in connection with surgical conditions, sometimes following soon after such an operation as circumcision. Diphtheria of the foot has been noted after an operation for tendon transplantation, and it has also occurred after abdominal operations. Under these conditions there is often marked sloughing of the tissues. Nose and throat cultures are likely to be negative. Before the days of active immunization, physicians working in contagious disease hospitals sometimes acquired diphtheria of the finger when performing an intubation. Trauma is usually a necessary factor for the diphtheritic infection.

Diphtheria may involve the skin of any portion of the body. It tends to run a more or less chronic course until treated with diphtheria antitoxin, which is generally strikingly effective. Constitutional symptoms may not be marked.

ALLERGY TO INSULIN

To the Editor:—Can you help me out on a therapeutic problem? I have a patient who has diabetes mellitus, passing a considerable amount of dextrose daily. She has had this condition for several years. I have recently started her on insulin a second time, the first time being about two years ago. She had had from six to eight injections of from 20 to 30 units twice daily, about three in the arm and five in the thigh. After each injection there is a localized reddened and slightly indurated area about the size of a silver dollar (38 mm.), which itches intensely. This will last for two or three days. February 4 she was given an injection in one arm after a cessation of injections, because of the local reactions, for about three days. She ate about five minutes after the injections and about twenty minutes later I was called, at which time she was extremely uncomfortable, with intense itching over the entire body, especially the hands and the soles. The site of injection was reddened for an area of 2 or 3 inches radially from the point of injection. It was difficult for her to swallow, respiration was slightly difficult, and the heart rate was from 130 to 140 beats per minute. One cc. of epinephrine subcutaneously relieved this condition in about fifteen minutes. The reddened area—intense itching—lasted for about three or four days. I have been unable to explain this condition. The woman needs insulin. The brand used is insulin-Lilly. Can you give me some help in this case? Is there another brand of insulin that would not give this reaction? What probably causes this reaction?

J. S. Duncan, M.D., Gary, Ind.

Answer.—The patient is probably allergic to the traces of protein in the insulin that is being used. This insulin, as prepared for general distribution, is made from hog pancreas. The same firm can supply insulin derived from beef pancreas, which the patient will probably be able to take without trouble.

DERMATITIS HERPETIFORMIS

To the Editor:—A patient of mine has suffered from dermatitis herpetiformis for some years. He has taken from 8 to 30 drops of solution of potassium arsenite daily for three years. At present he is taking 8 drops daily. The skin of the entire trunk, legs and arms, but not the face, is heavily pigmented, almost black. He has also a large keratosis in the scar of a pressure sore on one heel. The scar was caused by a cast applied to heal a fracture two years ago, but the scar has recently built up to a thickness of three-eighths inch and is rough and jagged. The patient is so terrified because of the itching of the dermatitis herpetiformis that nothing will persuade him to discontinue the arsenic, even for a few weeks. He claims that the dermatitis herpetiformis appears if he decreases the dose of Fowler's solution below 8 drops daily. Is the patient likely to cause any permanent damage by the prolonged ingestion of arsenic? If so, could you suggest another remedy for the dermatitis herpetiformis?

M.D., Ontario.

Answer.—The patient is already suffering from a probably permanent injury in his pigmentation. Quinine, autohemotherapy and prolonged neutral baths are remedies worthy of being tried in the case.

LOCOMOTOR ATAXIA WITH RECTOGENITAL CRISES

To the Editor:—A man, aged 51, has locomotor ataxia with crisis of the rectogenital organs. He contracted syphilis about sixteen years ago. He had at that time only three injections of arsphenamine for the secondary eruptions. Then there was a period of quiescence of symptoms of the syphilis for ten years. Thereafter about six years passed; the patient began to notice some difficulty in micturition and bowel movements. Meanwhile there were lightning pains. Then, two years later, there were staggering gait and a sensation of thickness under the feet. In the year next to those two there came the rectogenital crisis, giving extremely painful suffering. With regard to the crisis, the patient said that it acquired the spasmodic contractions of the anal orifice and some tenesmus in the rectum, and at the same time there was a drawing-in feeling of the penis so that he had to hold and rub it with a hand against the pubis or he must make a hurried walk in order to counter the spasmodic acts of the muscles. There were also tossings of the lower half of the body during the spasms. This fit was more severe following each defecation and urination, especially after a sleep. The spasms lasted about an hour, from two to three hours, later becoming quiet. Before the crisis appeared, the patient felt as if something were running from the lumbar region down to the anus behind and penis in front; hence the tragedy. Sometimes this feeling traveled upward, effecting an oppressive sensation in the chest and thus making the crisis less severe. Moreover, a performance of strokings applied to the sacral region might also ease the patient a little from the spasms. There were desires of frequent micturition at the height of the spasmodic contractions. He slept very badly. He had to get up at night by the crisis following the longing for voiding urine when he was going to fall into sleep. The bowels were constipated and spastic in manner. The crisis was suppressed by the smoking of some opium whenever it occurred but was greatly exaggerated by the sudden total withdrawal of the drug in the autumn before last. Since then this exaggeration of spasms has no longer been arrested by opium. The patient consulted me last spring for his chief complaint, the rectogenital crisis. On examination he was slightly undernourished. There was gingivitis. He could not stand well quietly; there were some swingings of the body. The pupils were contracted, unequal in size, and not accommodated to light. The tendon reflexes of the knee and ankle joints were also lost. There were hyperesthesia and hypesthesia on both legs. The skin of the lower half of the body was somewhat roughened, and scalings and itchings of that part were constant. There were numerous petechial spots on a forearm, being produced by the application of a hemomanometer. The heart was much hypertrophied. There were to and fro murmurs in the aortic region. The blood pressure was 186 systolic and 28 diastolic. The pulse was 20-30 beats more than normal. The Wassermann reaction was strongly positive. I treated the patient first with acetylarsan and then changed to sulu-salvarsan of 3 cc. each of two doses and another of 4 cc., which was reacted to the next day by polyneuralgias and increased tendency to rectogenital spasms. After a rest of three weeks I gave thiobismol and iodomaisin. Now I have again changed iodine pills to mirion and bismuth to neoarsphenamine, started at 0.05 Gm. strength. They are injected alternately in each week. Further, I have prescribed a conjoined use of vitamin B for the degenerated nerves of the spinal cord. It was injected daily except on the days of neoarsphenamine and iodine. While having been treated so long (about ten months in the course), there are indeed at present some improvements of the skin of the lower extremities, being smooth to touch and relieved of itchings. Besides, as combined with the vitamin injections, thirty in number, the spasms of the rectogenital organs are comparatively not so severe following each urinary and fecal discharge as it formerly did without the vitamin indications. The appetite is rather good, and taste is sweet. The sleep is somewhat sounder than ever before. The systolic blood pressure is somthing about 160, but the diastolic pressure is still 28. The pulse diminishes its frequency to normal in quiet times and is yet around 80 during the fit of muscular contractions of the anus and penis. The bowel discharges were easily made every day for two months at a time not long before the present, but recently they became spastic again. The serum test is still positive. Kindly advise me how to manage the case, particularly to control the crisis in order to do away wholly with the patient's sufferings, whereby to spare the damaged heart. What is your idea about the vitamin B to the degenerated heart?

Shen Chia-shan, M.D., Tientsin, China.

Answer.—The treatment of cases of the type described is often discouraging. On the whole, rectal crises respond better to treatment than do gastric crises, and continuation of intensive antisyphilitic therapy, is indicated. A number of the drugs mentioned are unfamiliar. Of the drugs used in this country the best results, on the whole, are obtained with the intensive use of arsphenamine, giving in the neighborhood of thirty-six to forty injections in four courses, in combination with double this number of injections of a bismuth compound. If the serologic responses of the spinal fluid are strongly positive and associated with a high cell count, intraspinal therapy may be tried.

The results with fever therapy, on the whole, are not encouraging and the general condition of the patient would hardly permit cordotomy. If a deficiency of vitamin B was present, as seems probable from the response obtained with its administration, it is possible that the nerves governing heart action were included in the deficiency. It would seem advisable to continue this method of therapy. For relief of the crises themselves, the administration of chloral 0.6 Gm. and bromides 0.6 Gm. given with 30 cc. of olive oil instilled into the rectum may give relief.

V 10
1937

UNDESCENDED TESTES UNDER FIVE YEARS OLD

To the Editor:—Have there been any investigations of the use of gonadotropic substance in the treatment of undescended testes in patients under 5 years of age? All reports I have seen so far have been on older patients. Would there be any risk involved in treating a patient 3 years old who has unilateral cryptorchidism but who is apparently normal otherwise?

M.D., Connecticut.

ANSWER.—The use of gonadotropic substance in the treatment of undescended testes is not advised at such an early age as 5 years. In many instances patients with unilateral cryptorchidism will undergo a spontaneous cure without any treatment. There is no contraindication to the use of a gonadotropic substance at an early age, but experience has taught that it is better to postpone active medication for a period, as many of these cases will be relieved without treatment.

EFFECTS OF CALCIUM AND VITAMIN D ON CARIES DURING PREGNANCY

To the Editor:—A reply in QUERIES AND MINOR NOTES in THE JOURNAL, May 22, would imply that the administration of an abundance of calcium and vitamin D might prevent dental caries during pregnancy. It is unfortunate that the answer gives certain references to articles that leave the impression that an abundance of calcium and vitamin D is useful in the treatment of this disease. It unfortunately overlooks the circumstance that the greatest progress in the control of dental caries has been made not by such diets but by the operative procedures which dentists have long practiced; i. e., removal of the carious areas and treatment and restoration by conservative methods. Unfortunately, treatment today is largely arrestive, not preventive.

The thesis that the administration of calcium and vitamin D for prophylaxis against dental caries is appealing but the evidence to support it has been disappointing. There can be no quarrel with the general position that a diet ample in calcium and vitamin D is useful to the mother during pregnancy. The effect this has on the carious process of a child or mother is still an open subject. This subject was amply covered in a review of the problem by the Council on Dental Therapeutics in a report entitled "Calcium and Phosphorus Compounds in Dentistry" (*J. Am. Dent. A.* **23**:139 [Jan.] 1936). That article was the basis of an editorial review in THE JOURNAL, May 8, page 1655.

The evidence available does not support the view expressed in the dictum "for every child a tooth," as far as pregnancy is concerned. Mull and Kinney (*Am. J. Obst. & Gynec.* **27**:679 [May] 1934) studied the blood and teeth of a large series of pregnant women and concluded: "There is no appreciable change in the teeth of women during pregnancy or the first weeks of lactation other than that which would probably occur in a similar group of nonpregnant women during the same period of time. The levels of the calcium and the inorganic phosphorus of the serum of the pregnant women bear no direct relation to the condition of her teeth." There is critical clinical confirmation of these observations.

Hunscher (*J. Biol. Chem.* **86**:35 [March] 1930) found that negative calcium and phosphorus balances were found in early lactation in spite of large intakes of these elements, but, in late lactation when less milk was secreted, both calcium and phosphorus were stored in the maternal body. Macy (*ibid.*, p. 59) found, in addition, that daily feeding of cod liver oil and yeast during the highest period of milk flow resulted in greater calcium and phosphorus utilization. No notation is made in that article concerning the effect on the teeth.

The foregoing is interesting nevertheless in pointing out that not calcium or phosphorus alone but vitamin D is important. This would appear to warrant the conclusion that not only the absolute amounts of calcium and phosphorus but those materials on which they are dependent for fixation are important. There is other evidence which bears on this point but which need not be cited here.

If a pregnant woman is to take calcium and cod liver oil during pregnancy it should be taken with the understanding that it is more important for purposes of general hygiene and good health, barring other complications, during this period than for the effect on the teeth of the mother; and milk as a source of calcium in preference to tablets or powders is to be preferred, for obvious reasons.

If caries occurs during that period, one should avail oneself of the benefit of operative dentistry. This, as far as available information goes, is the surest means of avoiding the further ingress of dental decay.

SAMUEL M. GORDON, Chicago.
Secretary, Council on Dental Therapeutics.

NEUROLOGIC SYMPTOMS DUE TO TRAUMA OR ARTERIOSCLEROSIS

To the Editor:—In your reply to Dr. E. L. Finley of Oneida, N. Y., regarding neurologic symptoms due to trauma or arteriosclerosis (THE JOURNAL, July 24, p. 298) you state that there is no evidence to show that an accident could have brought about the neurologic syndrome mentioned: pain in the back, loss of strength, and difficulty in getting about. In view of type of injury, 200 pounds pinning him, why could he not have sustained a fracture of the vertebral column or injury with possible rupture of the intervertebral disk? While the patient was lying flat in bed he had no symptoms, but the moment the casts were removed from both lower extremities and he was permitted to assume the erect position his syndromes began to appear. Does this not suggest injury to the spine that was perhaps previously overlooked? Unless there is proof that this injury was ruled out entirely, it should be kept in mind. Although the loss of speech cannot be accounted for, the pain in the back is too important a single symptom from the point of view of trauma to be completely dismissed.

ABRAHAM KATZ, M.D., Bronx.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, August 21, page 611.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Sept. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written examination for Group B applicants* will be held in various cities throughout the country in April. *Oral examination for Group A and B applicants* will be held at San Francisco in June. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written examination* will be held in different centers of the United States and Canada, Oct. 18. Chairman, Dr. Walter L. Bierring, 406 Sixth Ave., Rm. 1210, Des Moines, Iowa.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written examination and review of case histories of Group B applicants* will be held in various cities in the United States and Canada, Nov. 6. *General examination for Groups A and B* will be given in San Francisco, June 13-14. *Applications must be filed not later than sixty days prior to examination dates.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Chicago, Oct. 9 and San Francisco, June 13. *All applications and case reports, in duplicate, must be filed at least sixty days before the date of examination.* Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Los Angeles, Jan. 14-15. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 8-9. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: Chicago, Oct. 17; Los Angeles, Nov. 7; Boston, Nov. 14, and New Orleans, Nov. 30. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 28 (tentative). Sec., Dr. Walter Freeman, 1028 Connecticut Ave., N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Chicago, Sept. 9-11. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Part I (written),* Oct. 20. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

Arkansas June Examination

Dr. L. J. Kosminsky, secretary, State Medical Board of the Arkansas Medical Society, reports the written examination held at Little Rock, June 17-18, 1937. The examination covered 12 subjects and included 100 questions. An average of 75 per cent was required to pass. Forty-four candidates were examined, all of whom passed. The following schools were represented:

School	PASSED Year Grad.	Per Cent
University of Arkansas School of Medicine	(1937)	78.8, 79.4, 79.8, 80.2, 80.3, 80.3, 80.6, 80.6, 80.7, 81.2, 81.4, 81.6, 81.8, 81.9, 82, 82.1, 82.3, 82.3, 82.3, 82.4, 82.5, 82.5, 82.8, 82.8, 83.1, 83.2, 83.3, 83.3, 83.6, 83.7, 84.1, 84.1, 84.3, 84.4, 85, 85.2, 85.2, 85.3, 85.3, 85.7, 86.3, 87.2, 87.8
Johns Hopkins University School of Medicine	(1935)	82.8

Ten physicians were licensed by reciprocity and one physician was licensed by endorsement since January 1. The following schools were represented:

School	LICENSED BY RECIPROCITY Year Grad.	Reciprocity with
Northwestern University Medical School	(1934)	Illinois
University of Kansas School of Medicine	(1933)	Kansas
Tulane University of Louisiana School of Medicine	(1936)	Louisiana
Johns Hopkins University School of Medicine	(1924)	Maryland
Washington University School of Medicine	(1932), (1933)	Missouri
University of Cincinnati College of Medicine	(1921)	Ohio
Meharry Medical College	(1907)	Tennessee
Vanderbilt University School of Medicine	(1929)	Tennessee
Universität Heidelberg Medizinische Fakultät	(1924)	Texas

School	LICENSED BY ENDORSEMENT Year Grad.	Endorsement of
Johns Hopkins University School of Medicine	(1935)	N. B. M. Ex.

Nebraska June Examination

Mrs. Clark Perkins, director, Bureau of Examining Boards, reports the medical examination held at Omaha, June 8-9, 1937. The examination covered 10 subjects and included 92 questions. An average of 75 per cent was required to pass. Seventy-eight candidates were examined, all of whom passed. The following schools were represented:

School	PASSED Year Grad.	Number Passed
Creighton University School of Medicine	(1936, 3), (1937, 11)	14
University of Nebraska College of Medicine	(1935), (1936), (1937, 62)	64

Book Notices

Medical Uses of Radium: Summary of Reports from Research Centres for 1935. Medical Research Council, Special Report Series, No. 216. Paper. Price, 1s. Pp. 38, with 9 illustrations. London: His Majesty's Stationery Office, 1936.

As formerly, this report reviews the research done during the year with radium and radon distributed by the Medical Research Council to selected centers in Great Britain and Ireland. In the experimental section the investigations on cellular action conducted in Strangeway's research laboratory in Cambridge are reported under three headings: biologic response as a function of the intensity of radiation (Spear and Hughes), the effect of gamma radiation on cell division in the tadpole (Gluecksmann and Spear) and the mode of action of radiation (Lea, Haines and Coulson). In the St. John Clinic and Institute of Physical Medicine, Taylor has made some studies aimed at the determination of the effect of combining low frequency (so-called ultra short) waves with high frequency oscillations (gamma rays) on tumors of the rat. These examinations showed that the sensitivity of Jensen rat sarcoma and the Walker carcinoma to radium radiation was not affected by the ultra short waves. At the Imperial College of Science and Technology the measurements during the last year of the effect of temperature of a neutron "gas" on the absorption of a neutron into silver nuclei has been extended by Moon and Tillman to a number of other elements. From the Mount Vernon Hospital and Radium Institute, Mottram reported on the variations in sensitivity of the cell to radiation in relation to mitosis and on mesoblastic tumors produced in fowls by exposure to radium.

Interesting experiments from the clinical point of view have been performed at the Holt Radium Institute in Manchester by Ham. He treated skin epitheliomas and rodent ulcers with the radium mold, using different distribution in time of the same total dose. In one group of patients he applied the radiation treatment on the first and third days and so on; that is, at intervals of forty-eight hours. In another group he applied the same amount of treatment on the first and fourth days and so on; that is, at intervals of seventy-two hours. In a third group he applied the same total dose at intervals of one week; that is, half of the treatment on the first day and the other half on the seventh day. The results disclosed the fact that irradiating with the split dose as described definitely reduces the skin tolerance compared to the same dose applied with continuous treatment over seven days. The skin reactions were much more pronounced with the split dosage, which was most intense when only two treatments were applied, on the first and on the seventh day.

John Ross of the Royal Free Hospital performed experiments in rabbits with the purpose of inducing malignant tumors by implantation of radium tubes, based on an accident in clinical experience when a radium needle used in the treatment of cancer of the breast was lost. This needle became embedded in the intraventricular septum of the heart, and death occurred three years later from a gradual heart failure. At necropsy a malignant hemangioma was found in the liver immediately underlying the needle. In the experiments on rabbits the author could produce five sarcomatous tumors and two squamous cell carcinomas around the embedded radium tubes.

The clinical section of this report is grouped round the new modes of technic for the treatment of cancer in various parts of the body and the statistical records of the results of treatment over a period of years. Cancer of the breast, corpus and cervix uteri, mouth, nasopharynx, larynx, esophagus and rectum are considered. For cancer of the breast no decidedly new method has been used, radiation being reserved for the inoperable lesions or in combination with surgery. In cancer of the cervix the Marie Curie Hospital reports a five year survival rate out of all treated cases of 36.79 per cent (170 : 462) for patients treated between 1925 and 1930. A slight improvement is noted for those treated during the later years, giving a five year survival rate of 42.6 per cent for patients treated in 1930 against 30 per cent for those treated in 1925 and 1926. The results of treatment of cancer obtained by the different centers are tabulated. No essentially new method of approach is reported in the treatment of cancer of the rectum.

Live Long and Be Happy: How to Prolong Your Life and Enjoy It. By Lewellys F. Barker, M.D., Visiting Physician, Johns Hopkins Hospital, Baltimore. Cloth. Price, $2. Pp. 224. New York & London: D. Appleton-Century Company, Incorporated, 1936.

This book, which, according to the author, is intended for the "intelligent laymen who wish to prolong their individual lives, and for general practitioners of medicine who will advise such laymen as to the best methods," attempts with this declaration an almost impossible task. The material is given according to a well considered outline. The author begins with a discussion on the desire for long life and continues by pointing out the changing duration of human life and on what such longevity depends. He discusses heredity, environment, personal habits and occupations in their relationships to longevity. Following this he points out how life may be prolonged through the prevention and adequate treatment of infectious diseases and diseases of the heart and blood vessels, digestive apparatus, excretory organs and locomotor system. The final chapters deal with the prevention of nervous and mental diseases, as well as diseases of metabolism and the endocrine system that may shorten life. Such a table of contents will intrigue the lay reader as well as the physician, who, after all, is a teacher of health as well as a healer.

After the third chapter, the book attempts to carry out its promise made in the preface and to give information to lay reader and physician alike. The book from here on becomes a semitechnical handbook that serves neither of its avowed masters well. For the layman, to achieve long life and happiness becomes difficult when, for example, the various definitions given for diseases of the respiratory tract are too brief to be informative. The disease condition bronchiectasis is dealt with in seven lines. Pulmonary emphysema is probably of academic interest to most laymen. The difference between catarrhal and diphtheritic laryngitis is of interest to the layman and deserves far more space than the few lines given to it, which mention that during the latter condition "an intubation tube may have to be inserted." For the physician, the short definitions in this chapter are superfluous, since they give him no new knowledge and only an extremely meager review of well know facts.

Another objectionable feature is the attempts of the author to give references to medical literature. Such references to medical journals are necessary when writing for a physician, but the layman usually experiences great difficulty in obtaining the technical journals. Then, too, such journals are never written in language easy for the layman to understand. Examples of such references are found where the author states in discussing pneumonia: "Experiences of F. G. Blake and his associates in New Haven indicate that artificial pneumothorax induced soon after onset is invaluable . . . useless seventy-two hours after onset"; "abnormal movements like those of myoclonia"; "Isaac advises the use of acetyl-beta-methylcholine."

Dietetics Simplified: The Use of Foods in Health and Disease. By L. Jean Bogert, Ph.D., Consultant in Nutrition, Delineator Institute, New York City. With Laboratory Section. By Mame T. Porter, M.A., Head of Home Economics and Nutrition, Department of Public Welfare, Utica, N. Y. Cloth. Price, $3. Pp. 637, with 75 illustrations. New York: Macmillan Company, 1937.

The authors attempt the difficult rôle of providing "a simply written yet thoroughly scientific text on dietetics" to be "of service to students in home economics courses, to hospital dietitians, to nurses and medical students" as well as to "physicians who desire to educate their patients" and to "intelligent housewives." It appears manifestly impossible to teach at one and the same time such a heterogeneous group of readers. This is particularly true when a knowledge of chemistry is one of the backbones of nutrition. In an effort to simplify the subject of dietetics the authors have allowed factual errors to enter; e. g., "the food carbohydrates consist of starch, double sugars and single or simple sugars," and a large number of like misstatements. It is assumed that the authors intend to be practical. Why then select dry gelatin as an illustration of the calculation of the caloric content of protein? What would one want with 100 Gm. of dry gelatin? All the gelatin one could eat at a sitting amounts to 5 Gm. Furthermore, it is stated on page 25 that gelatin is 100 per cent protein, whereas the table on page 604 reveals that it is 91.4 per cent

protein. Egg white is also given as 100 per cent protein, despite analyses to the contrary. It is realized that these are used merely as illustrative material in the text, but they show poor choice and correlation. On page 30, among foods listed as rich in sugar are cocoa and chocolate, which in the unsweetened state are not edible as such. On page 27 the following is to be found: "An animal starch called glycogen also exists but is found in appreciable quantities only in such foods as liver, oysters and other shell-fish." It is feared that this statement is derived from the fact that, in the majority of analyses of meat, mention of the carbohydrate content is omitted and therefore it is erroneously assumed that meat is starch free. The contrary is the case. In the carbohydrate analyses of muscle it has been conceded that the carbohydrate is in the form of glycogen and in a great number of meat items it is present in more than appreciable quantities. On page 31 fish is listed as being a food rich in fat; i. e., between 10 and 25 per cent. In the most recent analyses of all the fishes, the only items among all the fishes which in the raw state meet this qualification are bloater, butterfish, finnan haddie, mackerel, salmon and swordfish. It is surprising to note on page 31 that a diet high in starch "may be a predisposing factor in arthritis." Part II, on diet in normal conditions, encompassing menu building, adequate diets for normal adults and food for children and elderly people, is recommended. It appears that these angles of dietetics are studiously avoided in the average textbook. However, one may take exception to a protein intake of 50 Gm. of protein daily as being ample after 60 years of age. The volume cannot be recommended for detailed accuracy, but in a newer, corrected edition it should find a place in the teaching of elementary dietetics.

Les régimes chez l'enfant. Par L. Babonneix, médecin de l'Hôpital Saint-Louis. Paper. Price, 75 francs. Pp. 607. Paris: Masson & Cie, 1936.

The book is divided into three main parts. The first part deals with general physiologic aspects of nutrition and with the phases more closely associated with the nutrition of children. In this part the importance of certain amino acids for life, maintenance and growth is given due consideration. Methionine, it may be mentioned, should be included among the important sulfur-containing amino acids, and glutathione is given as a dipeptide instead of as a tripeptide. An excellent feature of the book is the discussion of the vitamins. In the chapter on minerals, magnesium, with its specific rôle in the production of lactic acid under certain conditions, may perhaps deserve a little more attention. Another praiseworthy section is the one devoted to the interrelation of various nutritional elements—proteins, fats and carbohydrates, as well as salts, vitamins and water.

The second main part concerns the dietary management of the normal and the sick infant. The advantages of maternal breast feeding are stressed. A few quotations from general and medical literature are given to demonstrate the advantages of breast feeding for the mother's health and beauty. The efforts at stimulating breast feeding in France are noted. In the chapter on the nutrition of sick infants various diets are given, starting with a water diet. Diets based on buttermilk and other acid milks, on dried and condensed milk and on other foods, such as soya meal, are included. The preparation, composition, indications and contraindications are described. Among the humanized milk mixtures, synthetic adapted milk might have been included. The milk of asses is given more prominence than is usual, and it is emphasized that the milk spenders should be fed on dry fodder. Protein milk (Finkelstein) is dismissed in a manner indicating little experience with it. Fruits and vegetables are not neglected. Under special headings, mainly with reference to dietetic management, are discussed the ailments of the infant, such as anemia, anorexia nervosa, arthritism, with its two main subdivisions of hepatic insufficiency and toxemia, which is a rather problematic entity, and avitaminosis deficiencies of protein, carbohydrate, fat, minerals and water. Cholera infantum, constipation, congenital debility, various forms of diarrhea and dyspepsia, athrepsy, eczema and intestinal infantilism (celiac disease) are also discussed. Parenteral infections are considered, as well as gastric, hepatic and pancreatic insufficiency, alimentary allergy, prematurity, rhachitism, overfeeding and habitual vomiting. In the rather uneven chapters on these subjects the author often gives a short paragraph of his personal opinions.

The dietary regimen of children from 2 to 15 years of age forms the subject of the third main division, to which thirty-three pages are devoted. In the first part, dietary regimens of normal children are given, and in the second part, those of sick children, under the main headings of diseases of the circulation, skin, digestion, nervous system and respiratory tract, infections of the urinary tract and diseases of nutrition, including obesity and diabetes, and diet after operation. The second subdivision of the third part is a rather ambitious undertaking; the ambition is perhaps not realizable in such a short compass, and, as is to be expected, the section is not free from omissions and other faults.

If one compares the facts in the book about the physiologic aspects of nutrition with the nutrition of patients, it becomes evident that there still exists a considerable cleft, the bridging of which will need much further effort. The book has many highly commendable and attractive features.

Manual of Biological Assaying. By James C. Munch, B.S., M.S., Ph.D., Professor of Pharmacology and Bioassays, Temple University, School of Pharmacy. Paper. Price, $2. Pp. 181, with 22 illustrations. Philadelphia, London & Montreal: J. B. Lippincott Company, 1937

This brief compendium of methods used in the bio-assay of drugs, although intended for a wider audience, will be found useful chiefly by the student. In addition to concise instructions on the performance of many tests, blank tables and pages are included in profusion for recording experimental data. Among the materials for the bio-assay of which directions are given are aconite, anthelmintics, arsphenamines, biologic products, cannabis, digitalis, epinephrine, ergot, insecticides, insulin, local anesthetics, morphine, parathyroid extract, thyroid, sex hormones and vitamins. For some of these (e. g., estrogens and androgens) actual working details are insufficient; for others they appear to be satisfactory. Absence of pagination in the major portion of the book makes reference unnecessarily difficult.

Die Herz- und Gefässkrankheiten. Von Professor Dr. Walter Frey, Direktor der medizinischen Universitätsklinik Bern. Paper. Price, 29 marks. Pp. 342, with 67 illustrations. Berlin: Julius Springer, 1936.

The author has written a scholarly treatise on diseases of the heart and blood vessels. Instead of cataloging the known facts of the clinical aspects for ready reference he has presented a logically developed summary, correlating the pertinent facts and theories concerning this subject. The material, consequently, is developed on an etiologic basis, and the morphologic and physiologic data are brought in where they apply. The same applies to symptoms, signs, diagnosis, prognosis and treatment. Little is said about the distribution of diseases as usually handled when discussing etiology, and this is a favorable aspect of the book. The first section discusses the embryologic origin and development of the heart and blood vessels. The second section discusses in turn the congenital malformations, the normal and abnormal development of the cardiovascular system with age, and the involution of the heart and blood vessels with senility. The third section of the book deals with the sclerotic process. This is subdivided into sclerosis of the heart, the arteries and the veins. This section is properly the longest in the book, and coronary sclerosis receives the greatest consideration. The next section deals with damage of bacterial and toxic origin. There is a discussion in general terms, followed by the action of various bacteria and toxins on the heart, arteries and veins. In the final section, damage caused by the endocrine system and the vegetative nervous system on the heart and vascular systems is presented. Glandular dysfunction, as well as the various neuroses, is considered in this section. The organization of this book is different from most dealing with this subject and is an improvement from the point of view of the development of the subject scientifically. While exception may be taken to many of the statements, the reader of experience will find a great deal of factual data and theoretical argument which will be stimulating. He will be impressed by the fact that the subject dealt with is not morphology, physiology, bacteriology, pathology or the practice of medicine but in the truest sense is medical science. The book shows beautifully how the conglomeration of facts gathered

from many fields can give rise to a new science. The author demonstrates his familiarity with the international literature. He has kept abreast of the developments of his field and has introduced few personal biases. This book is recommended in the highest terms for the serious student of diseases of the heart and blood vessels.

The Dosage of Antitoxin in Diphtheria: Report of Departmental Committee Appointed by the County Medical Officer of Health and School Medical Officer. London County Council No. 3225. Paper. Price, 6d. Pp. 14. London: P. S. King & Son, Limited, 1936

This report is "an attempt to establish criteria for the guidance of the medical officers of the Council's hospitals." It takes up the matter of diphtheria toxin, its tissue combination, and the aim of antitoxin treatment. Emphasis is laid on the time factor and it is insisted that "every hour, every minute of delay—and this is not a figure of speech—is damaging. If the amount of toxin is near the lethal dose, life itself is at stake" (Schick). Intravenous administration is designated as the ideal route when rapidity of action is necessary, but not all cases are recommended for this technic. The intramuscular route is recommended when speedy absorption is less urgent. A single dose is recommended rather than repeated doses. Serum reactions and other unusual effects are briefly but adequately discussed and desensitization is outlined. There is an excellent brief outline of the clinical manifestations of diphtheria. The booklet is a useful summary of the best current knowledge with relation to the early and adequate administration of antitoxin in the treatment of diphtheria.

The Diagnosis and Treatment of Diseases of the Stomach and Intestines. By William Fitch Cheney, B.L., M.D. Henry A. Christian, M.D., Sc.D., LL.D., General Editor of the Series. (Reprinted from Oxford Monographs on Diagnosis and Treatment.) Cloth. Price, $5.50. Pp. 378. New York: Oxford University Press, 1936.

As a large territory is encompassed in a comparatively small volume, consideration of the various diseases is necessarily brief. In the main, only the commoner, clinically most important, diseases are discussed. There are not many statements with which authorities would disagree. For example, the remark that the great majority of ulcers of the stomach are situated at the pyloric end is debatable. Most chronic benign ulcers are situated at the pars media and lesser curvature as a matter of fact, although the pyloric antrum is a commoner site of gastric carcinoma and carcinomatous ulcers. In the article on chronic gastritis, it is obvious that only the superficial catarrhal, or probably the atrophic, variety is described. The statement that gastric analysis alone supplies the evidence on which a diagnosis of chronic gastritis depends is seriously open to question. Of the various benign tumors, only gastric polyps are considered. The chapter on reflex disturbances of gastric function, especially that portion dealing with appendiceal dyspepsia, is admirably done. Treatment is given ample and sane consideration. The volume has two noteworthy features: (1) a gastro-enterologic point of view of the clinician of the older, school and (2) a fine literary quality characterized by simplicity of diction and construction which every medical writer might emulate. Regardless of minor shortcomings, the book can be read with pleasure and profit by practitioner and specialist alike.

Studies and Investigations Into the Corpus Luteum Hormone. By Kai Portman. Paper. Pp. 124, with 8 illustrations. Copenhagen: Levin & Munksgaard, 1935.

The author presents here a summary of investigative work performed by him at the University of Copenhagen from 1931 to 1933, with brief discussions of the literature. This work, of course, was completed before crystalline progesterone was isolated and prepared by pseudosynthesis in 1934 and therefore deals with potent but not completely purified preparations. The work described should be of interest both to investigators and to clinicians, representing extensive experiments in animals as well as a series of clinical cases. Much of this is in agreement with reports that have appeared in recent medical literature. An interesting observation made by the author is that by feeding massive doses of progestin to rabbits a slight effect on the uterine mucosa could be obtained. It requires more than fifty times as much by mouth as by injection to produce a detectable effect in the rabbit, owing to destruction of the active principle by the digestive juices. Favorable results in the treatment of forty patients with menorrhagia, symptoms of the menopause or threatened abortion are described.

L'infection bacillaire et la tuberculose chez l'homme et chez les animaux: Etude biologique et expérimentale; vaccination préventive. Par A. Calmette. Fourth edition revised by A. Boquet and L. Nègre. Cloth. Price, 175 francs. Pp. 1,024, with 69 illustrations. Paris: Masson & Cie, 1936.

The advances in the knowledge of the tubercle bacillus and of tuberculosis since the previous edition was published nine years ago have been incorporated into the present edition without any change in Calmette's original plan. The book deals primarily with the fundamental—strictly scientific as distinguished from the social—problems of tuberculosis. There are four parts: the bacillus of tuberculosis, the anatomic form of tuberculous infection, its localization and routes of entrance (404 pages); experimental tuberculosis and tuberculosis of animals; the defense of the body against tuberculosis and the use of the reactions of defense in diagnosis; natural immunity and processes of immunization against tuberculosis. There are twenty-four fine plates in colors and many black and white illustrations. Calmette's great book remains a standard, comprehensive French work on the bacteriology, morphology and immunology of tuberculosis.

Recent Advances in Endocrinology. By A. T. Cameron, M.A., D.Sc., F.I.C., Professor of Biochemistry, Faculty of Medicine, University of Manitoba. Third edition. Cloth. Price, $5. Pp. 458, with 65 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1936.

This is the third edition of this member of the Recent Advances Series in a little more than three years. The new volume has been enlarged by the addition of about fifty pages containing new material. In general the work has been improved over previous editions (reviewed in THE JOURNAL May 5, 1934, and Sept. 28, 1935) but it still retains many of the deficiencies pointed out in previous reviews. Some of the discussions, such as those on the estrogens and androgens, have been considerably expanded with the inclusion of much useful material.

A Manual of Operating Room Procedures. By Almira W. Hoppe, Science Instructor, Jewish Hospital of St. Louis, and Lucile M. Halverson, Supervisor of Operating Rooms, University of Minnesota Hospitals. Assisted by the Operating Room Nursing Staff of the University of Minnesota Hospitals. Boards. Price $2. Pp. 239. Minneapolis: University of Minnesota Press: London: Oxford University Press, 1937.

The purpose of this small volume can be commended, and the tabulation of the necessary equipment for the routine surgical procedures shows evidence of thorough familiarity with such necessities and of excellent judgment in the avoiding of too detailed a discussion on the purposes of operations and the details of technic. It should not be assumed by those who use this book that on these two subjects the information is complete. For example, the statement that the "purpose of radium insertion in the vagina or uterus is to treat cancer" disregards the many cases in which radium is used for nonmalignant conditions. The possible difficulties arising from such incomplete information could easily be removed by a more inclusive statement as to the pathologic conditions for which the operation may be done.

The authors and the University of Minnesota Press have obviously had in mind the constant modification of old methods and the introduction of new ones, and the loose leaf binding will add materially to the usefulness of the manual in making it possible for one to keep pace with the advances in operating room procedures.

Synopsis of Ano-Rectal Diseases. By Louis J. Hirschman, M.D., F.A.C.S., Professor of Proctology, Wayne University, Detroit. Cloth. Price, $3.50. Pp. 288, with 180 illustrations. St. Louis: C. V. Mosby Company, 1937.

Anything that comes from the pen of this author merits attention. In this little volume he has presented the common problems of proctology in a most interesting, concise and practical form. There are numerous illustrations, some of which are in color, which aid materially in clarifying the accompanying descriptions. The book was prepared by one whose unusual experience particularly fitted him for the task, and in his own words it is a synopsis of anorectal diseases.

V 10
1937

Hemophilia: Clinical and Genetic Aspects. By Carroll LaFleur Birch, M.D., Assistant Professor of Medicine. University of Illinois Bulletin Volume XXXIV, No. 55. Illinois Medical and Dental Monographs, Volume I, No. 4. Paper. Price, $2. Pp. 151, with illustrations. Urbana: University of Illinois, 1937.

This book is based on data from ninety-eight patients with hemophilia, studied from the point of view of the clinical manifestations, blood picture, diagnosis, course of the disease, transmission and genealogy. The family history and background of ninety-four of the patients are given in seventy-five charts and are summarized in tabular form. The photographs are unusually clear and graphic. Treatment is not considered separately; the discussion is limited to the clinical and genetic aspects. It is a valuable source book for physicians, research workers and geneticists interested in hemophilia. The monograph is useful as a supplement to the classics on this disease.

Menstruationsstörungen hormonalen Ursprungs: Eine klinische Untersuchung. Von P. N. Damm. Paper. Price, 12 Danish kroner; 10 marks. Pp. 285, with 21 illustrations. Copenhagen: Levin & Munksgaard; Leipzig: Johann Ambrosius Barth, 1936.

This small, well printed book contains a review of the literature on sex-endocrine factors in the human female with presentation of the author's own data. The subjects covered include cyclic changes in ovary and uterus, assay of estrogen in blood, urine and feces and determination of gonadotropic substance in blood and urine in the normal menstrual cycle, in amenorrhea and hypomenorrhea and in menorrhagia and metrorrhagia; the effects of endocrine therapy are also discussed. Investigations of this type are highly important to an understanding of the physiologic basis of the menstrual cycle and to development of rational therapy of its disturbances. Physiologists and clinicians alike will find this a useful work.

Materia Medica, Toxicology and Pharmacognosy. By William Mansfield, A.M., Phar.D., Dean and Professor of Materia Medica and Toxicology, Union University, Albany College of Pharmacy, Albany, N. Y. Cloth. Price, $6.75. Pp. 707, with 202 illustrations. St. Louis: C. V. Mosby Company, 1937.

Through excellent photographs that face the description of almost every individual drug discussed, this book should bring to the student's mind vivid pictures of the specimens seen in the laboratory and thus help him in his study and review. The section on toxicology aims to classify the poisons in such a way as to make it easier for the student to remember the symptoms of poisoning and treatment; but the tests for the detection of poisons are not given. Unfortunately, the book seems deficient in that it makes no attempt whatever toward acquainting the student with the histologic appearance of the drug in its powder form, which is something most schools of pharmacy attempt to give their students, nor is there any attempt made at teaching the detection of adulterants.

Klinische Elektrokardiographie mit einem Grundriss der Arrhythmien. Von Dr. Wilhelm Dressler. Mit einem Geleitwort von Prof. Dr. C. J. Rothberger. Fourth edition. Paper. Price, 10.50 marks. Pp. 180, with 151 illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1937.

In this edition the author has completely revised the text and replaced many of the illustrations in an attempt to keep the subject matter down to date. He has introduced the important subject of lead 4 and expanded the section on myocardial disease at the expense of the section on arrhythmias. He has continued the excellent plan of placing in italics the sections in each chapter dealing with clinical aspects. The advances made in electrocardiography are incorporated in simple language; the author shows his acquaintance with foreign as well as with German literature. The subject of arrhythmias, so beautifully developed by the Viennese school, is presented in clear and direct fashion. This book deserves its popularity.

L'année thérapeutique: Médications et procédés nouveaux. Par A. Ravina. Onzième année, 1936. Paper. Price, 20 francs. Pp. 175. Paris: Masson & Cie, 1937.

In this volume, appearing annually, the author compiled reports of recent developments and progress in the field of therapeutics for the year 1936, most especially from French literature. Browsing among the numerous items abstracted, one notes the treatment of alcoholism by provoking intolerance by the smuggling of ipecac into the daily dose of liquor. Hot baths are recommended as efficient in the treatment of urticaria and vitamin B in the neuritis of pregnancy. When local anesthesia relieves lightning pains of tabes but temporarily, alcoholization of the sensory nerve may produce a prolonged relief. In gastric crises, intravenous injections of 10 per cent saline solution antagonizes hypochloridemia. These few examples suffice to give an indication of the range of practical subjects covered.

Dr. F. G. Gades pathologisk-anatomiske laboratorium i Bergen, 1912-1937. [Dr. F. G. Gade's Pathologic Anatomic Laboratory in Bergen, 1912 to 1937.] Paper. Pp. 107, with illustrations. Bergen: J. W. Eides Boktrykkeri A. S., 1937.

In 1912 Dr. Gade, who died in 1933, founded a laboratory in close affiliation with the city hospital of Bergen. This report covers the first twenty-five years of the activities of this laboratory. In addition to the statistical material—226 necropsies were made in 1936—there are interesting accounts of its history and organization and of special phases of its activities, notably on cancer, medicolegal examinations and extensive investigations of typhoid diseases in the western parts of Norway. The body of the report, as well as the list of publications at the end, shows that the laboratory has been an active center of excellent practical and scientific importance from its beginning.

An Introduction to Medical Science. By William Boyd, M.D., M.R.C.P., F.R.C.P., Professor of Pathology in the University of Manitoba. Cloth. Price, $3.50. Pp. 307, with 108 illustrations. Philadelphia: Lea & Febiger, 1937.

One is impressed by the very simplicity of presentation of this introduction to medical science: it "gives an airplane view of disease." There are three sections: the first deals with general principles of disease, the second with diseased organs and the final section with some practical considerations. Great care is exercised by the author to show the relationship between the lesions present and the symptoms produced. The book should prove of value to nurses, premedical students, hospital technicians and the general reader interested in matters of health and disease. There are numerous well chosen illustrations and a good index.

Entstehung und biologische Bekämpfung typischer Infektionskrankheiten. Vorlesungen auf Grund der Ergebnisse experimenteller Untersuchungen. Von Dr. med. Richard Bieling, a. ö. Professor für Hygiene und Immunitätswissenschaft an der Johann-Wolfgang-Gothe-Universität Frankfurt a. M. Erste Folge. Boards. Price, 6.60 marks. Pp. 119, with 7 illustrations. Leipzig: Johann Ambrosius Barth, 1937.

The author's plan is to present typical examples of different groups of infectious diseases by way of illustrating the nature and mode of origin as well as biologic principles of treatment and prevention. Two more booklets similar to this are to appear in the course of the next two years. The diseases so far discussed are diphtheria as the example of a strictly toxic infection, pneumonia as an example of the bacteremic infections, and epidemic poliomyelitis as an example of infections caused by filtrable viruses. Symptoms and diagnosis are not included in the discussion, which deals with the fundamental pathogenic nature, the immune reactions and the biologic treatment of the three diseases. No original points of view are presented.

Prostitution: An Investigation of Its Causes, Especially with Regard to Hereditary Factors. By Tage Kemp. Paper. Price, 10 kroner. Pp. 253, with 12 illustrations. Copenhagen: Levin & Munksgaard; London: William Heinemann, Ltd., 1936.

This volume is based on investigations made in Copenhagen between 1931 and 1935. It concerns the records of 530 prostitutes, fifty of the case records being reported in full. This investigation seems to indicate that eugenic sterilization could have been of little value in preventing these cases of prostitution, that childhood and youthful environment were in general bad and that there are many widely different factors which may be the immediate or the contributing causes of prositution. The majority of prostitutes seem to be mentally a little abnormal. It is felt that well organized mental hygiene might be useful in controlling some of these cases and that there should be better coordination between the work of the police and of public welfare agencies in handling this problem.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Accident Insurance: Lumbosacral or Sacro-Iliac Strain in Relation to Anomalies of Spine.—The defendant insurance company, under a policy of accident insurance, promised to pay certain benefits to the physician-plaintiff if he was prevented from performing any and every kind of duty pertaining to his occupation as the result of an accident, independently and exclusively of all other causes. Dec. 25, 1932, in the course of answering a professional call, the physician slipped on an icy surface and, although he did not fall, wrenched his back. After the accident, he was wholly incapacitated and unable to attend to his usual professional duties. The insurance company refused to pay benefits for total disability and the physician brought suit against it. From a judgment in favor of the physician, the company appealed to the Supreme Court of Wisconsin.

The insurance company contended that the evidence showed that the physician's total disability was not due exclusively to accidental causes but was partly, if not wholly, due to conditions of health, and especially to an arthritic condition existing in the lower part of his back at the time of the accident. The company further contended that if the physician had sustained a sacro-iliac strain or sprain as a result of the accident, as he claimed, it should have been completely cured in from two weeks to three months in the absence of contributing causes. The defendant's contentions, however, did not meet with the Supreme Court's approval. In *Herthel* v. *Time Ins. Co.*, 265 N. W. 575, it was held that, if a disease or bodily condition exists and an accident occurs, in order to constitute the accidental means the sole cause of an injury within the meaning of policies of accident insurance it is not necessary to show that the injury or the result thereof would have been as severe in the absence of the preexisting disease or bodily condition. It is sufficient if the accidental means would have solely caused some considerable injury had the disease or bodily condition not existed. The testimony of the physician's medical experts, said the court, entitled the jury to conclude that, while there were certain abnormalities of growth in the physician's spine, these were the result of advancing years or congenital anomalies and were not produced by or evidence of an active disease which contributed to his incapacity in cooperation with the accident. The physician's experts further testified that the injury resulted in lumbosacral or sacro-iliac strain and that his present symptoms and disability were solely referable to the strain. The court concluded that this testimony must be taken to mean that the accident "would have solely caused some considerable injury" had the physician's spine been in a normal condition.

Accordingly, the Supreme Court of Wisconsin affirmed the judgment in favor of the physician.—*Egan v. Preferred Acc. Ins. Co. of New York (Wis.), 269 N. W. 667.*

Workmen's Compensation Acts: Chronic Bronchitis Resulting from Escape of Chlorine an Accidental Injury—Not an Occupational Disease.—Curley, an electrician, worked for about two months installing equipment to be used by the defendant corporation in manufacturing beryllium chloride. Some difficulty seems to have been experienced in adjusting the process of manufacture to local conditions and chlorine gas escaped at intervals into the room in which Curley was working until the process of manufacture was perfected. The plaintiff coughed frequently and became short of breath. Finally he had to quit work and seek medical attention. His attending physician diagnosed the condition as chronic bronchitis resulting from exposure to chlorine gas. Curley filed a claim under the Michigan workmen's compensation act but the department of labor and industry denied him relief on the ground that his disability was not the result of an accidental injury and hence was not compensable under the workmen's compensation act. Without appealing to the courts from the department's determination, Curley instituted a common law action against his employer, attributing his disability to negligence on the part of his employer in failing (1) to provide him with a safe place in which to work, (2) to warn him of the danger of chlorine gas, and (3) to furnish him with protecting safety appliances. The trial court directed a verdict for the employer and Curley appealed to the Supreme Court of Michigan.

The Supreme Court of Michigan affirmed the judgment of the trial court. It pointed out that the enactment of the Michigan workmen's compensation act conferred exclusive jurisdiction on the department of labor and industry in the first instance with respect to accidental injuries arising out of and in the course of employment, that Curley's disability was the result of an accident—the escape of chlorine gas—and not to an occupational disease, that Curley's sole remedy was under the workmen's compensation act, and that he should have appealed from the determination of the department of labor and industries to the courts.—*Curley v. Beryllium Corporation (Mich.), 270 N. W. 202.*

Evidence: Admissibility of Complaints Made to Physician Examining to Qualify as Witness.—The declarations of a person as to his symptoms, made to a physician not for the purpose of treatment but to aid the physician to form an opinion for the purpose of testifying as a witness for the declarant in a suit brought for personal injuries, said the Court of Errors and Appeals of New Jersey, are not admissible in evidence at the instance of the declarant. An expert witness for the defendant, however, in an action for damages for personal injuries may not only properly testify as to the conduct and result of his examination of the plaintiff but may also testify to any relevant statements made to him by the plaintiff with regard to the accident which caused such personal injuries. —*Sandford v. Chanaz Co. (N. J.), 189 A. 670.*

Practice of Embalming by Cooperative Association Illegal.—The state of Iowa sought to enjoin the Fremont Co-operative Burial Association, a corporation which supplied embalming and funeral services and burial supplies to its members when deaths occurred in their families, from engaging in the practice of embalming. From a decree of the trial court granting the injunction, the defendant association appealed to the Supreme Court of Iowa.

The defendant admitted that a corporation cannot lawfully practice a profession and that, as a corporation, it could not engage in embalming without violating the law. It contended, however, that the practice of a profession by a corporation was not involved in this case and that the real question presented was whether the employment of a licensed embalmer by an incorporated nonprofit cooperative association to render professional services as an embalmer to its members only constituted the practice of the profession of embalming by the corporation. Apparently, the defendant admitted that if the employment of the licensed embalmer by it, and the furnishing of his services to the public generally, were a part of the business conducted by it, there would be a violation of the law. But it contended that the services of its licensed embalmer were furnished only to the members of the cooperative association and that therefore there was no selling by it of professional services to the general public, and hence no violation of the law.

That a corporation, said the Supreme Court of Iowa, cannot legally furnish professional services to the public generally, through or by means of employing licensed members of a profession, for whose services it makes charges that go into the funds of the corporation, seems to be definitely settled in Iowa. The effect of the articles of incorporation of the defendant corporation and its by-laws, in the opinion of the court, was that any person residing within 35 miles of the town in which the corporation operated might avail himself of its services whether or not he was a member of the association at the time the services were required. If, for instance, a death occurred in the family of a nonmember, the head of the family or any person on whom would devolve the duty and liability of providing a burial for the deceased, even though he or she

V 10
1937

had never heard of the corporation and had no thought or intention of belonging to it prior to that time, would only have to go to the place of business maintained by the corporation, or to some one authorized to accept membership therein, and pay the membership fee. On such payment, the family in which the death had occurred would immediately be entitled to the benefits of the association, including the services of the licensed embalmer. A person applying for membership under such circumstances would have to pay a membership fee of $15 instead of a fee of $10 ordinarily charged members, but the court did not think that this increased fee could be used as a standard or criterion by which to determine bona fide membership in a cooperative association. The benefits of such an association, depending on the death of a person, should not be extended to cases in which neither the person claiming the benefits nor the deceased person was a member of the association at the time the death occurred. To permit the business of the corporation to be thus conducted, the court said, and the benefits of membership in it to be thus extended to the public generally, regardless of membership in the association at the time the death occurred, would be to approve of a scheme and a subterfuge that would permit the corporation to evade the purpose and provisions of the law.

The court did not determine whether an incorporated association, such as the one here involved, could legally furnish the services of a licensed embalmer to its members, if membership in the association was restricted by reasonable and legitimate requirements. Under the record in the case, the court concluded that the requirements as to membership were not such as to confine the benefits of the corporation to a bona fide body of members but extended the benefits to the public generally within a distance of 35 miles from the place of business of the corporation.

The decree of the lower court enjoining the corporation from practicing embalming was therefore affirmed.—*State v. Fremont Co-operative Burial Ass'n (Iowa), 270 N. W. 320.*

Privileged Communications: When Privilege Attaches to Examination of Patient.—In the trial of the present case for compensation under the Michigan workmen's compensation act it became material to determine whether or not a child was an offspring of the marriage of the deceased workman and his first wife. His second wife, the appellant herein, offered to prove that the first wife and the workman both went to certain physicians to determine why their marriage had been without issue; that the examinations indicated that the workman was incapable of reproduction because of a prior gonorrhea and double epididymitis; that subsequently the first wife gave birth to the child in question, and that later a second examination of the workman by the same physicians failed to change their original conclusions. The trial court refused to allow the physicians to testify, holding that their testimony was privileged under 3 Compiled Laws of Michigan, 1929, section 14216, reading in part as follows:

> No person duly authorized to practice medicine or surgery shall be allowed to disclose any information which he may have acquired in attending any patient in his professional character, and which information was necessary to enable him to prescribe for such patient as a physician, or to do any act for him as a surgeon.

From that ruling of the trial court, the second wife appealed to the Supreme Court of Michigan.

The appellant contended first that the privilege, if any, was waived because of the presence of the first wife at the examination of the workman. But, said the Supreme Court, the presence of an intimate family relation at the time of consultation should not and does not waive the privilege. The appellant next contended that the information obtained by the physicians was not privileged because the workman and his first wife had gone to the physicians for examination only and not for treatment, citing *In re Bruendl's Will*, 102 Wis. 45, 78 N. W. 169. In the Bruendl case, said the Supreme Court, the matter of treatment by the physician was wholly foreign to the purpose of the visit. No treatment was contemplated. Instead the woman examined in that case sought to establish that her mentality was such that a guardianship over her should be removed. In the present case the workman and his wife went to the physicians for the purpose of ascertaining why a child or children were not born of their union. Confidential communications followed, as well as several examinations and tests from which it was ascertained that the workman was incurably impotent. The workman and his wife were desirous of having offspring, and the inference necessarily arises that, if curative or remedial measures were available, such were contemplated. The privilege arises between a physician and his patient notwithstanding the patient's condition as disclosed is not subject to treatment. *Grattan v. Metropolitan Life Ins. Co.*, 24 Hun. (N. Y.) 43. In the present case the workman examined subsequently died. After the death of the patient, the privileged matter is all the more sacred, and the protection of the patient continues unless waived by some one authorized to do so. The court was of the opinion that the second wife was not authorized to waive the privilege.

The Supreme Court held, therefore, that the trial court properly refused to admit in evidence the proffered testimony.—*Bazzil v. Ford Motor Co. (Mich.), 270 N. W. 258.*

Society Proceedings

COMING MEETINGS

Academy of Physical Medicine, Philadelphia, Oct. 19-21. Dr. Herman A. Osgood, 144 Commonwealth Ave., Boston, Secretary.

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 10-13. Dr. W. P. Wherry, 107 South Seventeenth St., Omaha, Executive Secretary.

American Association for the Study of Neoplastic Diseases, Washington, D. C., Sept. 9-11. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N. W., Washington, D. C., Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Va., Sept. 20-22. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.

American Association of Railway Surgeons, Chicago, Sept. 20-22. Dr. Daniel B. Moss, 547 W. Jackson Blvd., Chicago, Secretary.

American Clinical and Climatological Association, Baltimore, Oct. 11-13. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.

American Congress of Physical Therapy, Cincinnati, Sept. 20-24. Dr. Richard Kovacs, 1100 Park Ave., New York, Secretary.

American Hospital Association, Atlantic City, N. J., Sept. 13-18. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.

American Public Health Association, New York, Oct. 5-8. Dr. R. M. Atwater, 50 West 50th St., New York, Executive Secretary.

American Roentgen Ray Society, Chicago, Sept. 13-17. Dr. Eugene P. Pendergrass, 1400 Spruce St., Philadelphia, Secretary.

Association of Military Surgeons of the United States, Los Angeles, Oct. 14-16. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.

Central Association of Obstetricians and Gynecologists, Dallas, Texas, Oct. 14-16. Dr. Ralph A. Reis, 104 South Michigan Blvd., Chicago, Secretary.

Clinical Orthopaedic Society, Chicago, Sept. 30-Oct. 2. Dr. H. Earle Conwell, 215 Medical Arts Bldg., Birmingham, Ala., Secretary.

Colorado State Medical Society, Colorado Springs, Sept. 22-25. Mr. Harvey T. Sethman, 537 Republic Building, Denver, Executive Secretary.

Delaware, Medical Society of, Wilmington, Oct. 12-13. Dr. W. H. Speer, 917 Washington St., Wilmington, Secretary.

Idaho State Medical Association, Boise, Aug. 30-Sept. 3. Dr. Harold W. Stone, 105 North Eighth St., Boise, Secretary.

Indiana State Medical Association, French Lick, Oct. 4-6. Mr. T. A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.

Inter-State Postgraduate Medical Association of North America, St. Louis, Oct. 18-22. Dr. W. B. Peck, 27 E. Stephenson St., Freeport, Ill., Managing Director.

Kentucky State Medical Association, Richmond, Sept. 13-16. Dr. A. T. McCormack, 532 West Main St., Louisville, Secretary.

Michigan State Medical Society, Grand Rapids, Sept. 27-30. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.

Mississippi Valley Medical Society, Quincy, Ill., Sept. 29-Oct. 1. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

Nevada State Medical Association, Ely, Sept. 24-25. Dr. Horace J. Brown, 120 N. Virginia St., Reno, Secretary.

Omaha Mid-West Clinical Society, Omaha, Oct. 17-22. Dr. J. D. McCarthy, 107 South Seventeenth Street, Omaha, Secretary.

Oregon State Medical Society, Salem, Oct. 21-23. Dr. Morris L. Bridgeman, 1020 S. W. Taylor St., Portland, Secretary.

Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 4-7. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.

Radiological Society of North America, Chicago, Sept. 13-17. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.

Utah State Medical Association, Salt Lake City, Sept. 2-4. Dr. F. M. McHugh, 17 Exchange Place, Salt Lake City, Secretary.

Vermont State Medical Society, St. Johnsbury, Oct. 14-15. Dr. A. B. Soule Jr., Mary Fletcher Hospital, Burlington, Secretary.

Virginia, Medical Society of, Roanoke, Oct. 12-14. Miss A. V. Edwards, 1200 East Clay St., Richmond, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Sept. 14-17. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1927 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

7: 1-40 (July) 1937

Cancer of Colon and Rectum. F. H. Lahey, Boston.—p. 1.
New Protamine Insulin in Treatment of Diabetes Mellitus. D. B. Snelling, Montgomery.—p. 9.
Mucocele of Appendix: Report of Two Cases (One Causing Intussusception, the Other Pseudomyxoma of Peritoneum). J. O. Morgan, Gadsden.—p. 14.

American Heart Journal, St. Louis

13: 633-776 (June) 1937

Congenital Stenosis of Abdominal Aorta. W. d'A. Maycock, London, England.—p. 633.
Hemodynamic Studies in Experimental Coronary Occlusion: I. Open Chest Experiments. L. Gross, M. Mendlowitz and G. Schauer, New York.—p. 647.
Id.: II. Closed Chest Experiments. M. Mendlowitz, G. Schauer and L. Gross, New York.—p. 664.
*Diagnosis of Impending Acute Coronary Artery Occlusion. J. J. Sampson and M. Eliaser Jr., San Francisco.—p. 675.
Work of Hyperthyroid Heart. C. H. McDonald, Little Rock, Ark.—p. 687.
Dynamic Effect of Acute Experimental Poisoning of the Heart with Diphtheria Toxin. D. B. Witt, E. Lindner and L. N. Katz, Chicago.—p. 693.
Midaxillary Leads of Electrocardiogram in Myocardial Infarction. M. B. Whitten, Dallas, Texas.—p. 701.
Use of Barium-Filled Esophagus in X-Ray Study of Abnormalities of the Heart and the Aorta. J. B. Schwedel, New York.—p. 723.
Mobile Unit for Simultaneously Recording Heart Sounds, Pulse Tracing and Electrocardiogram. K. Jochim, S. F. Gaddas and H. Marquis, Chicago.—p. 731.

Impending Coronary Artery Occlusion.—In contrast to the occurrence of progressive angina pectoris, it has been apparent to Sampson and Eliaser, on observation of twenty-nine cases extending over two and one-half years, that a single spontaneous attack of prolonged anginal pain strongly suggests the approach of a typical coronary thrombosis. Certain characteristics of these attacks of pain seemed to be so well defined that several patients were put to bed either at home or in a hospital from one to fourteen days prior to the development of the typical symptoms and signs of the arterial block. An interesting clinical comparison may be drawn between the diagnosis of impending coronary artery occlusion and impending occlusion of an intestinal artery. Dunphy defined the typical features of the latter condition and quoted a case history of premonitory pain occurring two months prior to death from the acute block of gradually thrombosing celiac axis and inferior mesenteric arteries. With a rich collateral blood supply, acute symptoms and signs of the blockage may never develop. This may account for the rare "silent coronary occlusion" seen at necropsy. The duration of the warning attack varied from two minutes to two hours, averaging sixty-three minutes in individuals without a history of angina pectoris and from fifteen minutes to fourteen hours, averaging two hours and forty minutes in patients with that history. There were only seven patients who had pain of less than twenty minutes' duration. No premonitory attacks occurred during sleep, and strenuous exertion occasionally preceded the pain. The interval between the premonitory attacks and the major attacks of the entire series varied between one and twenty-one days. The electrocardiograms taken were chiefly notable in that they offered no demonstrable assistance in making a diagnosis of impending thrombosis. Electrocardiograms taken after their occlusive attacks showed characteristic pathologic changes. There was a fatality of 34.5 per cent in the patients with the premonitory syndrome in the twenty-nine cases. The diagnosis of the premonitory syndrome is made difficult because certain patients seem to present some of the characteristics mentioned previously but fail to develop the typical signs of a coronary artery occlusion within a period of weeks afterward.

American Journal of Cancer, New York

30: 219-434 (June) 1937

Primary Carcinoma of Lung. L. F. Frissell and Leila Charlton Knox, New York.—p. 219.
Malignant Papillomas of Choroid Plexus: Report of Two Cases with Review of Literature. O. A. Turner and M. A. Simon, Cleveland.—p. 289.
Primary Chorionepithelioma of Ovary: Report of Two Cases. L.-C. Simard, Montreal.—p. 298.
Thymoma (Adenoma of Thymus) from Unusual Case of Myasthenia Gravis, with Observations on General Pathology. E. H. Norris, Minneapolis.—p. 308.
*Etiology of Cancer of Mamma in Mouse and in Man. W. Cramer, London, England.—p. 318.
Glycolysis and Tumor Growth. J. C. Krantz Jr., Ruth Musser, C. J. Carr and W. G. Harne, Baltimore.—p. 332.
Cell Division Stimulating and Inhibiting Substances in Tissues. G. L. Rohdenburg and S. M. Nagy, New York.—p. 335.
Action of Short Radio Waves on Tissues: II. Treatment of Animal Tumors in Vivo. F. Dickens, S. F. Evans and H. Weil-Malherbe, Newcastle-upon-Tyne, England.—p. 341.
Transplantable Metastasizing Cysticercus Plasmoma of Rat's Liver Associated with Multiple Subcutaneous Benzpyrene Sarcomas. F. D. Bullock, M. R. Curtis and W. F. Dunning, New York.—p. 355.
Production of Spontaneous Melanotic Neoplasms in Fishes by Selective Matings: II. Neoplasms with Macromelanophores Only; III. Neoplasms in Day Old Fishes. M. Gordon, Ithaca, N. Y.—p. 362.

Cancer of Mamma.—Cramer believes that the experimental production of cancer of the mamma by estrogen has enlarged the outlook on the etiology of cancer by demonstrating the existence of a carcinogenic environment which is entirely internal. In that respect there is an essential difference from the experimental carcinogenesis of the skin when the decisive factor is a carcinogenic agent acting from without and when the carcinogenic environment is partly external and partly internal. The existence of a carcinogenic environment which is entirely internal enables one to understand why a malignant condition can develop in organs not exposed to influences coming from without: why it is possible to obtain by inbreeding pure strains of mice with a high incidence of spontaneous cancer in one organ—the mamma—but not in another—the skin; and why such pure strains show considerable differences from one another and from mixed strains in the response of the mamma to the carcinogenic action of estrogen, while in the same strains no such differences are found in the response of the skin to the chemical substances carcinogenic for the skin. In man the familial incidence of cancer shows corresponding differences between the mamma, when the familial incidence is high, and the lip, when it is low. The inference is that cancer of the breast in women—at least in those with a family history of cancer of the breast—is the result of an internal carcinogenic environment. Since in mice this internal carcinogenic environment is associated with abnormalities in the endocrine system, a search for such abnormalities in women with cancer of the breast and a family history of cancer of the breast is indicated.

American Journal of Diseases of Children, Chicago

54: 1-208 (July) 1937

Infection of Renal Parenchyma from Pelvis of Kidney. H. F. Helmholz, Rochester, Minn.—p. 1.
*Fate of Children Infected with Tuberculosis During the First Five Years of Life. H. A. Rosenberg, Jackson Heights, N. Y., and Camille Kereszturi, New York.—p. 15.
*Results of Blood Transfusions in Primary Pneumonia in Infants and in Children. J. M. Arena, Durham, N. C.—p. 23.
*Caloric and Protein Requirements and Basal Metabolism of Children from Four to Fourteen Years Old. J. W. Maroney and J. A. Johnston, Detroit.—p. 29.
Tubercle Bacilli in Gastric Washings of Infants and of Children: Demonstration When Cutaneous Reaction to Tuberculin Is Positive But There Is No Evidence of Tuberculosis on Physical or Roentgenographic Examination. J. L. Rothstein, New York.—p. 47.
Similarity of Erythroblastic Anemia and Chronic or Congenital Malaria: Successful Treatment of Eight Patients with Quinine. S. Nittis, Detroit, and G. Spiliopulos, Athens, Greece.—p. 60.
Immunization Against Scarlet Fever. M. G. Peterman, Milwaukee.—p. 89.

Tuberculosis in Young Children.—From a study of 348 infants infected with tuberculosis during the first five years of life and observed for from one to nine years, Rosenberg and Kereszturi found that the rate of deaths from tuberculosis

was 9.1 per cent. Of the patients for whom roentgenograms of the chest were taken, 28.9 per cent presented parenchymal lesions of the lungs. The rate of mortality from tuberculosis among the Negro children was about twice that among the white ones. The incidence of parenchymal lesions of the lungs also was higher in the Negro group. The rate of deaths from tuberculosis among 175 children infected with the disease during the first year of life was 14.8 per cent; the fifty-nine who were infected during the first half of the second year showed a rate of 10.2 per cent. The highest rate, 43.7 per cent, occurred in the children infected during the first three months of life. No deaths from tuberculosis occurred in the group of 114 children infected after reaching 18 months of age. All the deaths from tuberculosis occurred in children less than 3 years of age. The rate of deaths from tuberculosis was more than five times as high in the children with parenchymal lesions as in those with enlarged tracheobronchial glands, and about eight times as high as in those who gave no roentgenographic evidence of having tuberculosis.

Blood Transfusions in Primary Pneumonia.—According to Arena, during the last three years, efforts were made at the Duke Hospital to give one or more blood transfusions to all infants and children who had severe primary pneumonia, whether or not they had anemia. However, because of the difficulty in obtaining suitable donors, thirty-five patients did not receive blood and consequently served as controls. The other twenty-four had one or more transfusions of citrated blood by the gravity method (maximal amount, 20 cc. per kilogram of body weight). The clinical symptoms, hemoglobin content and red and white blood cell count for the two groups were almost identical. The only difference which could be noted was that in the group who received transfusions there were probably more ill patients and more infants. Prompt and marked symptomatic improvement usually followed the transfusion, and the patient appeared more comfortable. The temperature fell by crisis within twenty-four hours of the transfusion in fifteen cases and within forty-eight hours in the other nine. The average interval between the onset and the crisis or lysis for this group was seven and nine-tenths days. Four of these children had the complication of suppurative otitis media, and one died. For the thirty-five patients who did not receive transfusions, the average interval between the onset and the crisis or lysis was nine and nine-tenths days. Three of these children had the complication of empyema, and nine had otitis media. Five died. The severe dyspnea and cyanosis which many of these children had were improved instead of made worse by the transfusions. Possibly, transfusions stimulate an increase in segmented polymorphonuclear leukocytes. The hemogram studies which have been made for several patients with primary pneumonia indicate that improvement or a crisis is attempted by an increase in the segmented polymorphonuclear leukocytes, with a decrease in the percentage of nonsegmented forms. The ratio of segmented to nonsegmented forms appears to be a good indication of the severity of the infection and the ultimate outcome. Perhaps transfusions are a form of serotherapy, introducing neutralizing antibodies or causing nonspecific protein shock. Another factor may be the supplying of cells to carry needed oxygen to the tissues, the replacing of those withdrawn from the circulation by the pathologic process.

Nutrition and Basal Metabolism of Children.—Maroney and Johnston measured the dietary intake of thirteen girls, aged from 5 to 12 years, and fourteen boys, aged from 4 to 14 years, over periods averaging nine and four-tenths months; their nitrogen balances were noted for an average of 111 days for each child, and periodic observations on their basal metabolism were made. Caloric and protein requirements per unit of height and weight were recorded for each child. Gain in weight and height was obtained with caloric intakes representing increments over the basal calories averaging 67 per cent for the girls and 74 per cent for the boys. With calories adequate for growth, intakes of protein representing 15 per cent of the total calories seemed optimal. Amounts greater than 20 per cent were usually productive of pallor, loss of appetite, abdominal discomfort and sometimes vomiting. With amounts less than 15 per cent a negative nitrogen balance or depression of the basal metabolism was frequently observed. The so-called sparing effect of fat and carbohydrate on protein was reexamined and confirmed; this constitutes an argument for recording the protein requirement in terms of the percentage of calories rather than of grams per unit of weight.

American Journal of Medical Sciences, Philadelphia

194: 1-148 (July) 1937

Intensive Collapse Therapy in Pulmonary Tuberculosis: II. Study of Indications and Use of Various Operative Procedures in Group of 1,124 Patients. G. L. Leslie and R. S. Anderson, Howell, Mich.—p. 1.
Death Following Phrenicectomy. D. A. Cooper and W. H. Erb, Philadelphia.—p. 19.
*Chronic Myelogenous Leukemia: Observations Before and During Remissions Induced by Solution of Potassium Arsenite and by Roentgen Therapy, with Particular Reference to Bone Marrow. D. J. Stephens, Rochester, N. Y.—p. 25.
Effect of Subcutaneous Injection of Adrenalin on Leukocyte Count of Splenectomized Patients and of Patients with Certain Diseases of Hematopoietic and Lymphatic Systems. S. P. Lucia, M. E. Leonard and E. H. Falconer, San Francisco.—p. 35.
Paroxysmal Complete Heart Block Alternating with Normal Rhythm and Conduction. W. J. Comeau, Boston.—p. 43.
Vagal Reflex Irritability and Treatment of Paroxysmal Auricular Tachycardia with Ipecac. S. Weiss and H. B. Sprague, Boston.—p. 53.
Adult Scurvy: Study of Urinary Output of Cevitamic Acid. A. Nisenson and A. G. Cohen, New York.—p. 63.
*Febrile Albuminuria. J. W. Welty, Philadelphia.—p. 70.
Human Autonomic Pharmacology: VI. General and Local Sweating Produced by Acetyl-Beta-Methylcholine Chloride (Mecholyl). A. Myerson, J. Loman and M. Rinkel, Boston.—p. 75.
Clinical Effectiveness of Lactic Acid Jelly as Contraceptive. C. J. Gamble, Philadelphia, and G. W. Beebe, New York.—p. 79.
Diabetes and Pregnancy. D. Hurwitz and F. C. Irving, Boston.—p. 85.
Adenoma of Islet Cells of Pancreas with Operation and Recovery. F. W. Lukens and I. S. Ravdin, Philadelphia.—p. 92.
Tumor of the Brain with Normal Encephalogram. N. Savitsky and M. B. Bender, New York.—p. 96.
*Visceral Pathology in Measles: Clinicopathologic Study of 100 Fatal Cases. J. A. Degen Jr., New York.—p. 104.
Congenital Polycystic Kidney: Report of Its Occurrence in Several Members of One Family. G. R. Gordon and A. Trasoff, Philadelphia.—p. 112.

Chronic Myelogenous Leukemia.—Stephens presents detailed observations of the peripheral blood, bone marrow, nitrogen balance and oxygen consumption in two patients with typical chronic myelogenous leukemia before and during satisfactory remissions induced by solution of potassium arsenite and by roentgen therapy. In each instance treatment was followed by clinical improvement, reduction of the total leukocyte count to a normal level, marked decrease in immature cells, reticulocytosis, improvement in the anemia, return of the oxygen consumption to a normal level and striking changes in the bone marrow. In each instance the gray, hyperplastic, cellular leukemic bone marrow was replaced (presumably temporarily) by a relatively hypocellular, fibrotic marrow and the markedly increased myeloid-erythroid ratio was decreased to an approximately normal level. Roentgen therapy was followed by a marked increase in the nitrogen excretion. The administration of solution of potassium arsenite was followed by no significant change in the nitrogen balance.

Febrile Albuminuria.—Welty studied the relation of fever to albumin in the urine in forty patients receiving fever therapy. The patients treated were suffering from dementia paralytica, atrophic arthritis, gonorrheal arthritis and chorea. All had a blood urea nitrogen within normal limits, a normal Mosenthal concentration test and several negative examinations of the urine for albumin. Fever was induced by means of the Kettering hypertherm and an average temperature from 105 to 106 F. was maintained for from four to six hours. A specimen of urine was obtained before the febrile period; a second specimen was collected after the fever had reached its height and had been maintained for several hours; the third specimen was the first urine voided after the temperature had fallen to normal. These urines were then examined as to specific gravity, reaction to litmus paper and for gross albumin by the sulfosalicylic acid reagent. The exact amount of urinary albumin was determined by the quantitative sedimentation method of Skevky and Stafford. In 95 per cent of the subjects the prefever urine albumin was below 0.03 per cent, and 80 per cent presented a figure below 0.02 per cent. The urine albumin exceeded 0.04 per

cent in only one case. These are normal values and offer better proof of absence of renal disease in the group than the blood urea nitrogen and the Mosenthal test. During the febrile period 22.5 per cent of cases showed a decrease in albumin with fever, while 77.5 per cent had an increase in the level of urine albumin. This increase was very definite, being more than 100 per cent in twenty of the subjects and more than 200 per cent in sixteen cases. On four occasions the albumin level increased 500 per cent. In spite of the rather large percentage rise, the actual albuminuria is not likely to be massive. During fever only nine of the forty cases showed albumin in the urine as determined by the sulfosalicylic acid method. The patients had a temperature elevation for only a few hours, but had this been maintained for days, as is the rule in infectious fevers, it is probable that larger amounts would have appeared. Comparison of the prefever and postfever urine albumin levels indicated that 70 per cent of the subjects continued to show an increase in albumin in the specimens voided after return of the temperature to normal. This suggests that the increased output is carried over into the postfever stage; the possible delay in voiding, however, must be considered in evaluating these results.

Visceral Pathology in Measles.—Degen made a study of the pathologic changes found throughout the body in 100 deaths from measles. In analyzing the pathologic observations in these cases, he found the most striking observation to be the absence of any specific gross or microscopic pathologic lesion which, in the absence of additional clinical data, could lead to a diagnosis of measles. The most constant pathologic change appears to be pneumonia and inflammation of the upper part of the respiratory tract, but even the pneumonia is not of a single type. Elsewhere the gross picture is one of secondary infection and concomitant toxic changes, the infection being most often apparently of a streptococcic nature. Microscopic examination also shows evidence chiefly of a severe and widespread toxic and infectious process. Among these changes, the frequent presence of an interstitial, mononuclear cell infiltration is of especial interest. A purely interstitial mononuclear infiltration was observed in the measles series in practically all of the twenty-two sections of the trachea, in twenty of the eighty-nine liver sections, and in from one to six cases each in the heart, kidney, adrenal and pancreas. The eleven skin sections examined all showed slight mononuclear cell infiltration of the corium. Slight endothelial cell changes were observed in four of these, but in none were there the marked changes and proliferation of these cells described in measles rashes by Ewing, Mallory and Medlar, and Denton. Bacteriologic studies at necropsy showed the hemolytic streptococcus, either alone or in combination with other bacteria, to be overwhelmingly the chief organism present. No lesion definitely pathognomonic of measles was found.

American Journal of Psychiatry, New York

93: 1265-1500 (May) 1937

Intelligence and Socialization. F. L. Wells, Boston.—p. 1265.
Blood Estrin Level in Schizophrenia. H. A. Sears, R. A. Morter, Maria Simonsen and C. Williams, Kalamazoo, Mich.—p. 1293.
Luetic Hypertrophic Leptomeningitis: Clinicopathologic Study. A. P. Smith Jr., Tuskegee, Ala.—p. 1305.
Brain Potential Rhythms in Case Showing Self-Induced Apparent Trance States. M. M. Thomson, T. W. Forbes and M. Marjorie Belles, New York.—p. 1313.
Response of Psychoneurotics to Variations in Oxygen Tension. R. A. McFarland and A. L. Barach, New York.—p. 1315.
The Science of Man. A. Korzybski.—p. 1343.
Psychosis with Cardiac Decompensation. J. C. Michael, Minneapolis. —p. 1353.
Evaluation of Opposed Theories Concerning Etiology of So-Called "Dementia" in Dementia Praecox. Mary Phyllis Wittman.—p. 1363.
Prefrontal Leukotomy in Treatment of Mental Disorders. E. Moniz, Lisbon, Portugal.—p. 1379.
Relationship of Sudden Withdrawal of Alcohol to Delirium Tremens. P. Piker, Cincinnati.—p. 1387.
Clinical Staff Conference. C. F. Read, Elgin, Ill.—p. 1391.
The Case of Floyd Dell: Study in Psychology of Adolescence. L. J. Bragman, Binghamton, N. Y.—p. 1401.
Influence of Carbon Dioxide in Combating Effect of Oxygen Deficiency on Psychic Processes, with Remarks on Fundamental Relationship Between Psychic and Physiologic Reactions. E. Gellhorn, Chicago, —p. 1413.
Correlation of Oxygen Deprivation with Intelligence, Constitution and Blood Pressure. S. H. Kraines, Chicago.—p. 1433.

American Journal of Public Health, New York

27: 555-644 (June) 1937

Pneumonia and Tuberculosis Among Industrial Workers and Their Dependents. C. H. Kibbey, Birmingham, Ala.—p. 555.
Nomenclature for Colon Group. R. S. Breed, Geneva, N. Y., and J. F. Norton, Kalamazoo, Mich.—p. 560.
Comparison of Solid with Liquid Mediums as Means of Determining Presence of Lactose Fermenting Bacteria in Pasteurized Milk. M. W. Yale, Geneva, N. Y.—p. 564.
Nutritional Economics of Dietary Calcium. F. L. Gundersen, Chicago. —p. 570.
Nature of Antarcealogic Susceptibility to Poliomyelitis. W. L. Ayeock, Boston.—p. 575.
Function of School in Rural Health Program. Ruth E. Grout, Olean, N. Y. —p. 583.
Modern Concept of Education. Fannie B. Shaw, New York.—p. 587.
Certain Factors Affecting Growth of Food Poisoning Micrococci. G. J. Hucker and W. C. Haynes, Geneva, N. Y.—p. 590.
Recent Trends in Pellagra. W. DeKleine, Washington, D. C.—p. 595.
The Public Health Nurse. L. Farrand, Ithaca, N. Y.—p. 600.
Measurement of Error of Death Rates in the Colored Race. Ruth Rice Puffer, Nashville, Tenn.—p. 603.
Place of Mental Hygiene in Provincial Health Program. B. T. McGhie, Toronto.—p. 609.
Need for and Value of Intensive Program of Health Education in State Health Departments. F. J. Underwood, Jackson, Miss.—p. 615.

Annals of Otol., Rhinol. and Laryngology, St. Louis

46: 291-576 (June) 1937. Partial Index

Defense Mechanisms of Upper Respiratory Tract. R. A. Fenton and O. Larsell, Portland, Ore.—p. 303.
New Method of Radium Application in Cancer of Bronchus. J. J. Pressman and C. K. Emery, Los Angeles.—p. 314.
Benign Strictures of Esophagus: New Method of Gradual Dilatation. C. L. Hong, San Francisco.—p. 327.
*Relapsing Alternating Peripheral Facial Paralysis. P. Viole, Los Angeles.—p. 351.
Pharyngeal Reconstruction for Nasopharyngeal Stenosis: New Operative Procedure. G. B. O'Connor, San Francisco.—p. 376.
*Cause of Dizziness in Head Injuries: Vestibular Test Study in Sixty-Six Patients. M. A. Glaser, Los Angeles.—p. 387.
Primary Cholesteatoma of Mastoid. L. B. Bernheimer, Chicago.—p. 453.
Endocrine Imbalances and Their Relation to Upper Respiratory Tract. G. F. Harkness, Davenport, Iowa.—p. 488.
Adenoids and Immunity. H. B. Lemere, Beverly Hills, Calif.—p. 498.
Etiology of Saddle Nose: Preliminary Report. M. M. Wolfe, Philadelphia.—p. 504.

Relapsing Alternating Peripheral Facial Paralysis.—His observations in two cases lead Viole to agree with Tumarkin that the presence of pain at the onset of a facial palsy and the disturbance of taste are of great prognostic significance. In the first instance the patient did not complain of either of these symptoms and recovery apparently is complete. These two symptoms were definitely present in the second case reported, and there is still noticeable residual involvement. The phenomenon of synkenesis, as described by Tumarkin, plainly exists in the second patient. Disturbance of the facial nerve also undoubtedly influences the act of deglutition, as is demonstrated in the latter case. The premonition of onset experienced by the first patient, the author believes, is of interest and probably has existed in other instances. These two cases of relapsing alternating peripheral facial paralysis are presented mainly because similar cases must be of more frequent occurrence than is evident by the scarcity of reported instances in the literature.

Cause of Dizziness in Head Injuries.—Glaser analyzed sixty-six cases of dizziness from a series of 325 cases of head injury in order to determine the cause of dizziness in head injuries and the value of vestibular tests as a diagnostic adjunct, as well as the ability of the patients to prognosticate the duration of dizziness. The vestibular tests are of no value in determining either the type of dizziness or the presence or absence of dizziness encountered in these patients, nor by them can the duration of dizziness be prognosticated. They do, however, in certain cases, reveal the presence of pathologic change within the brain and thus corroborate, to a degree, the truth of the patient's story with regard to a head injury. In this manner they are indirectly of value in eliminating the malingerer. It is quite evident that the common types of dizziness associated with head injuries are not dependent on definite vestibular lesions; instead, it is likely that they are due to an entirely different mechanism, possibly transient cerebral vasomotor disturbances. Encephalograms and vestibular tests, performed on four patients, both demonstrated pathologic changes in the central part of the brain. In two of these patients dizziness was entirely absent. Vestibular tests performed in

V 1
193

sixty-six cases revealed subjective symptoms in 80 per cent, objective neurologic signs in 21 per cent and vestibular abnormalities in 76 per cent. Objective signs were thus demonstrated more frequently by vestibular examination than by clinical neurology. Though no distinct vestibular complex was associated with head injuries, there were certain predominant observations. Normal vestibular responses may indicate either an undamaged brain or a brain evidencing pathologic change which has not involved the vestibular pathways. Lesions of the end organ signify peripheral involvement of the vestibular fibers, while central lesions indicate pathologic changes either directly present or adjacent to the central vestibular pathways.

Archives of Internal Medicine, Chicago

60: 1-178 (July) 1937

Diagnosis of Congenital Cystic Disease of the Lung. S. G. Schenck, Brooklyn.—p. 1.
*Cause of Death in Tularemia. L. Foshay, Cincinnati.—p. 22.
Pulmonary Infarction Complicating Severe Disease of Mitral Valve. H. B. Levine and P. D. White, Boston.—p. 39.
*Monocytic Leukemia: Cutaneous Manifestations of Naegeli and Schilling Types; Hemocytologic Differentiation. H. Montgomery and C. H. Watkins, Rochester, Minn.—p. 51.
Alterations in Serum Protein as Index of Hepatic Failure. E. F. Foley, R. W. Keeton, A. B. Kendrick and D. Darling, Chicago.—p. 64.
Acute Uranium Nephrosis: Mechanism of the Glycosuria. A. T. Milhorat and H. J. Deuel Jr., New York.—p. 77.
Carcinoma of the Islands of Langerhans with Hypoglycemia and Hyperinsulinism. R. W. Cragg, Marshelle H. Power, Rochester, Minn., and M. C. Lindem, Salt Lake City.—p. 88.
*Medicinal Treatment of Angina Pectoris. J. E. F. Riseman and M. G. Brown, Boston.—p. 100.
Normoglycemic Glycosuria Differentiated from Other Benign Glycosurias and Diabetes Mellitus. Florence H. Smith and K. A. Smith, Chicago.—p. 119.
Sickle Cell Anemia in the White Race: Improvement in Two Cases Following Splenectomy. R. L. Haden and F. D. Evans, Cleveland.—p. 133.
Clinical Symptoms of Chronic Gastritis: Observations on Thirty-Five Selected Cases. R. Schindler, Marie Ortmayer and J. F. Renshaw, Chicago.—p. 143.
Effect on Electro-Encephalogram of Certain Drugs Which Influence Nervous Activity. F. A. Gibbs, E. L. Gibbs and W. G. Lennox, Boston.—p. 154.
Bright's Disease: Review of Recent Literature. W. S. McCann, Rochester, N. Y.—p. 167.

Cause of Death in Tularemia.—Foshay's experience and a study of case records indicate that the chief cause of death attributable to tularemia alone is septicemia due to Bacterium tularense. Pneumonia that originates from the primary bacteremia does not become associated with fatalities unless septicemia supervenes. At least 70 per cent of the cases of tularemic pneumonia do not result in death. In a small number of cases, probably much smaller than the proportion in this series indicates, the primary bacteremia is septicemia from the onset and causes a rapidly fatal termination in from four to ten days. These unfortunate persons have apparently no natural resistance to the infection. The septicemia that causes most fatalities originates from a second invasion of the blood stream. Tularemia is especially dangerous to persons with preexisting coronary heart disease. Death may occur in such cases from coronary occlusion or acute myocardial failure during the initial acute phase or during convalescence. The surviving patient may suffer attacks of angina pectoris, coronary occlusion and heart block for years after recovery from tularemia. The third week of infection is the most dangerous period, and most deaths occur on the sixteenth day of illness. It is estimated that four of every five deaths from tularemia could have been prevented by the early administration of serum therapy.

Monocytic Leukemia.—Montgomery and Watkins make a distinction between monocytic leukemia of the Naegeli and that of the Schilling type on the basis of the hemocytologic pictures. Either type may be of primary autochthonous cutaneous origin. The type of cutaneous manifestations of either condition may be specific or nonspecific and may vary from discrete necrotic nodules or purpuric lesions to generalized exfoliative dermatitis. A distinctive histopathologic picture of monocytic leukemia of the Schilling type may be observed on examination of the skin, corresponding to the hemocytologic picture. Occasionally, myelogenous leukemia may terminate as monocytic leukemia of the Naegeli type or lymphatic leukemia may result in monocytic leukemia (Schilling) and still later again present the blood pictures of both conditions. Monocytic leukemia of the Schilling type (leukemic reticulo-endotheliosis) may assume an acute or chronic form, and even aleukemic reticulosis may be encountered. The cutaneous as well as the general clinical, pathologic and hemocytologic observations should be correlated in a given case in order to arrive at a correct diagnosis. A prolonged period of observation may be necessary before it is possible to ascertain the type of lymphoblastoma that will eventuate.

Drug Therapy in Angina Pectoris.—Riseman and Brown investigated the use of fifteen different drugs in the treatment of twenty-six patients with angina pectoris. Each drug was given several times a day for at least a week before its effect was evaluated. The patient's estimation of therapeutic benefit indicated that all the drugs were approximately equal in value. Placebos were just as often beneficial as other medicaments. The exercise tolerance test revealed that patients whose treatment consisted of lactose, sodium bicarbonate, potassium iodide or tissue extract were unable to perform any more work than was possible without medication. Glyceryl trinitrate given before work was undertaken prevented attacks and enabled many patients to do considerably more work. This prophylactic effect was often of relatively short duration, but attacks were prevented for as long as an hour in many cases. Such patients could be rendered completely free from attacks in daily life by taking glyceryl trinitrate at hourly intervals. For all practical purposes small doses ($\frac{1}{500}$ grain, or 0.1 mg.) were as valuable as larger doses and were attended by little discomfort. One half of the patients were benefited by either aminophylline or quinidine sulfate. Theophylline calcium salicylate, erythrol tetranitrate and atropine sulfate were often of value; occasionally they benefited patients not helped by either aminophylline or quinidine sulfate. Codeine sulfate and phenobarbital rarely enabled the patient to do more work before pain developed, but these sedatives appeared to be of aid as an adjunct in the treatment of the patient. Digitalis was rarely of value and frequently caused a striking increase in anginal attacks.

Archives of Pathology, Chicago

24: 1-134 (July) 1937

Cytology of Ovarian Tumors. R. C. Page and W. C. MacCarty, Rochester, Minn.—p. 1.
Influence of Dusts on Tuberculous Infection: Susceptibility of Subcutaneous Lesions Produced by Dusts to Infection by Tubercle Bacilli Injected Intravenously. A. J. Vorwald, Saranac Lake, N. Y., and A. Landau, Capetown, South Africa.—p. 8.
*Boeck's Sarcoid: Report of Six Cases in Which Autopsies Were Made. D. A. Nickerson, Boston.—p. 19.
Hyperplasia of Parathyroid Glands Secondary to Renal Insufficiency: Report of Case. A. A. Nelson, Minneapolis.—p. 30.
*Talcum Powder Granuloma. R. Fienberg, Boston.—p. 36.
Pathologic Changes in Tissues of Dog Following Injections of Rattlesnake Venom. H. N. Taube and H. E. Essex, Rochester, Minn.—p. 43.
Mechanism of Inflammation. V. Menkin, Boston.—p. 63.

Boeck's Sarcoid.—Nickerson believes that in his six cases, in which necropsies were made, the lesions were found for the first time in the myocardium, endocardium, pancreas, testis and vertebral and femoral marrow. Lesions were found in the spleen in five cases, with definite splenomegaly in four, and in the lungs in four cases. In differentiating sarcoid from tuberculosis, especially the miliary form, the following points are of assistance: 1. Caseation should never be present. In none of the lesions of sarcoid are any neutrophilic polymorphonuclear leukocytes seen, an observation one would expect in an early caseating tubercle. 2. The giant cells are different from those seen in tuberculosis. They show moderate variation in size, are usually much larger and contain many more nuclei, which are evenly distributed throughout the cell and are seldom arranged in the elliptic manner typical of tuberculous giant cells. 3. Lesions in tissues other than the lungs do not contain carbon pigment. 4. In the liver the lesions are most numerous in the portal triads, with only a few in the midzones of the lobules. In miliary tuberculosis the reverse is true. 5. With silver impregnation, a delicate reticulum is always present in the lesion. In tuberculosis this is destroyed by the onset of caseation. 6. No evidence of tuberculosis is found anywhere in the body. Giant cells may occur in all stages of the disease. The amount of collagen present seems to be a more accurate index of the activity of the infection. In the only case in which a

minimal amount was present, death was apparently due to this disease, an occurrence suggesting that an increase indicates a healing reaction. The presence of increased amounts of collagen indicates a healing reaction. Sarcoid-like lesions are composed of small irregular foci of elliptic macrophages with occasional areas of fibrosis and rare giant cells or lymphocytic infiltration, differing from true sarcoid in that they lack the smooth outline and cellular infiltration of the latter. While they may thus be distinguished, their significance and possible relationship are not yet entirely clear.

Talcum Powder Granuloma.—Fienberg presents two cases of granuloma caused by anisotropic crystals shown to be talc (magnesium silicate). Three cases are described of similar lesions in which the crystals were morphologically similar to talc crystals. Lesions similar to those found in these cases were produced in mice by talc. An analysis of the cases revealed the diagnostic errors caused by talc crystal granuloma under varied circumstances. The value of examination of suggestive sections under crossed Nicol prisms is stressed. The indiscriminate use of talcum powder in the operating room may produce granulomatous lesions.

Canadian Medical Association Journal, Montreal

37: 1-104 (July) 1937

Prevention of Silicosis by Metallic Aluminum: I. Preliminary Report. J. J. Denny, W. D. Robson, Schumacher, Ont., and D. A. Irwin, Toronto.—p. 1.
Hyperparathyroidism: Two Cases. G. S. Fahrni, Winnipeg, Manit.—p. 11.
Minute Oxyphil Adenoma of Parathyroid Associated with Calcium Deposits in the Kidney. B. Chown, Winnipeg, Manit.—p. 16.
Prevention of Poison Ivy Dermatitis by Intramuscular Injection of "Rhoigen" (Rhus Toxicodendron Oleo-Antigen). A. H. W. Caulfeild, Toronto.—p. 18.
Experimental Gas Embolism: II. Factors Other Than Air as Cause of Death in Some Cases Diagnosed "Air Embolism." B. C. Coles, H. F. Richardson and G. E. Hall, Toronto.—p. 24.
Quartan Malaria Transmitted by Transfusion. E. McCulloch, Toronto.—p. 26.
Some Changing Views About Edema and Diuresis. H. A. Christian, Boston.—p. 29.
Plea for Conservatism in Use of Cesarean Section. L. J. Harris, Toronto.—p. 32.
*Essential Unsaturated Fatty Acids in Relief of Common Cold. F. M. Boyd and W. F. Connell, Kingston, Ont.—p. 38.
Peroral Endoscopy: Observations in 200 Cases of Foreign Bodies. A. D. McCannel, Minot, N. D.—p. 42.
Experimental and Clinical Studies on Adrenal Insufficiency. R. A. Cleghorn, E. W. McHenry, G. A. McVicar and D. W. Overend, Toronto.—p. 48.
Insulin as Cause of Hippus. H. C. Jamieson, Edmonton, Alta.—p. 52.
Subacute Bacterial Endocarditis with Brain Abscess: Case. D. L. Mendel and M. Saibil, Montreal.—p. 53.
Leukemoid Blood Picture in Tuberculosis. E. S. Mills and S. R. Townsend, Montreal.—p. 56.
Study of Epidemic of Ringworm of Extremities in Orphan's Home. B. Usher and D. S. Mitchell, Montreal.—p. 60.

Fatty Acids in Relief of the Common Cold.—Following a control period of seven weeks, beginning January 1, during which colds were recorded, Boyd and Connell gave 15 minims (1 cc.) of purified linoleic and linolenic acids (vitamin F) daily to forty-one medical students for a further seven weeks, while sixty-five others served as controls. Vitamin F reduced the average incidence of colds by 64 per cent and the average duration by 78 per cent, there being at the same time little appreciable difference in the incidence and duration of the untreated group. Of the treated group, 71 per cent responded favorably and 29 per cent showed no relief. Unpleasant reactions occurred in one third of the treated cases, diarrhea, nausea and vomiting being the chief side effects, but most of these were temporary and disappeared when the substance was taken with, rather than between, meals.

Delaware State Medical Journal, Wilmington

9: 119-140 (June) 1937

*Obstetric Anesthesia and Analgesia: Their Effect on Third Stage of Labor. T. L. Montgomery, Philadelphia.—p. 119.

Procedure in Third Stage of Labor.—Montgomery considers the following a conservative and safe procedure in the third stage of labor: 1. The fetus having been delivered, for instance by low forceps and episiotomy, the anesthetic is at once stopped. 2. The uterus is palpated and then entrusted to a nurse, and the episiotomy is inspected to see that there is no large vessel bleeding. 3. Mucus is removed from the fetal air passages and resuscitation attended to. 4. In the meantime a half ampule of solution of posterior pituitary is given to the patient and the nurse reports on the condition of the uterus. 5. The baby's eyes are treated, the cord is dressed and the child is taken to the nursery. 6. The uterus is palpated and, when the typical signs of placental separation occur, the placenta is expressed. An ampule of an active ergot product is given deeply by hypodermic. 7. The uterus is massaged and held until it is consistently hard and only then entrusted to the nurse again. If bleeding is excessive, it is packed at once. 8. The placenta is examined and its completeness ascertained. 9. Precise inquiry is made as to the pulse, rate and volume, and the condition of the patient. If the report is favorable, immediate repair of the birth canal is decided on. If it is not completely favorable, the repair is postponed six or eight days or even two or three months. 10. If conditions permit of repair, anesthesia is reestablished, the parts are thoroughly reprepared, the operator's gloves (and gown too, if necessary) are changed, and the repair is performed in good light, with good exposure, and with the same care as a gynecologic perineorrhaphy. 11. The operation completed, the parts are dressed, the uterus is palpated, the pulse tested and the baby examined. 12. After dressing, the operator reexamines the mother and the baby and does not leave until an hour has passed. Such a routine ensures the recognition and prompt treatment of shock and the immediate arrest of hemorrhage. It has served the author well in many a difficult situation. The third stage of labor and the placental separation merit the most careful attention of the operator and are not to be complicated by continuing anesthesia and attempting to suture extensive episiotomies or lacerations while waiting for their completion. Labor should be completed, the patient made sure of and the damage repaired.

Journal of Experimental Medicine, New York

66: 1-132 (July) 1937

Infectious Myxomatosis of Rabbits: Preparation of Elementary Bodies and Studies of Serologically Active Materials Associated with Disease. T. M. Rivers and S. M. Ward, New York.—p. 1.
Influence of Host Factors on Neuro-Invasiveness of Vesicular Stomatitis Virus: I. Effect of Age on Invasion of the Brain by Virus Instilled in the Nose. A. B. Sabin and P. K. Olitsky, New York.—p. 15.
Id.: II. Effect of Age on Invasion of Peripheral and Central Nervous Systems by Virus Injected into Leg Muscles or the Eye. A. B. Sabin and P. K. Olitsky, New York.—p. 35.
Properties of Causative Agent of Chicken Tumor: XIII. Sedimentation of Tumor Agent and Separation from Associated Inhibitor. A. Claude, New York.—p. 59.
*Lymph Nodes as Source of Neutralizing Principle for Vaccinia. P. D. McMaster and J. G. Kidd, New York.—p. 73.
Mechanism of Lysis of Pneumococci by Freezing and Thawing, Bile and Other Agents. R. J. Dubos, New York.—p. 101.
Effect of Bacteriolytic Enzyme of Pneumococcus on Antigenicity of Encapsulated Pneumococci. R. J. Dubos, New York.—p. 113.
Propagation of Rabies Virus in Tissue Culture. L. T. Webster and Anna D. Clow, New York.—p. 125.

Source of Neutralizing Principle for Vaccinia.—McMaster and Kidd aver that their data prove that the regional lymph nodes elaborate an antiviral principle when virus is brought to them by way of the lymphatics from the injected ear of the rabbit, and that this is demonstrable within four days after the inoculation of virus. The experiments indicate that it could probably be demonstrated even after a shorter time, following an injection of virus in the ear, were better testing methods utilized, as for example if protective substances and virus were separated by filtration or by electrophoresis. The antiviral principle was present in greater concentration in the extract of the lymph nodes of the virus-injected side than in the undiluted blood serum procured at the same time, and in far greater concentration than in the serum diluted equally with the node extract. The possibility would seem to have been excluded that an antiviral principle developing in the injected ear or elsewhere in the body accumulated in the lymph nodes, thus accounting for the condition found. The control injections of typhoid vaccine inflamed both the injected ear and the nodes draining it, but no antiviral principle was ever found in either until long after their appearance in the nodes of the virus-injected side. The antiviral principle developed first in the nodes. The circumstances were much like those of natural infection and like those of artificial vaccination. The immunity

following clinical vaccination may well be of lymph node origin in great part. The relative amounts of antiviral principle present in the various organs or body fluids change much with the lapsed time after virus infection. The results in any individual case may depend largely on the port of entry of the virus, on the quantity entering and on whether it spreads rapidly or is retained by one tissue or organ.

Journal of Immunology, Baltimore

32: 421-500 (June) 1937

Preparation of Type Specific Carbohydrates of Gonococci. W. A. Casper, New York.—p. 421.
Apparent Antigenicity of Plastein. E. W. Flosdorf, S. Mudd and Esther W. Flosdorf, Philadelphia.—p. 441.
Immunization of Rabbits with Inactive Vaccine Virus. H. Bernkopf and I. J. Kligler, Jerusalem, Palestine.—p. 451.
Chemical and Immunologic Studies of Pneumococcus: IV. Ultrafiltration in Preparation of Type I, II, III and Atypical Polysaccharides. A. Wadsworth and Rachel Brown, Albany, N. Y.—p. 467.
Low Temperature Ball-Mill for Liberation of Labile Cellular Products. S. Mudd, C. H. Shaw, E. J. Czarnetzky and E. W. Flosdorf, Philadelphia.—p. 483.

Journal of Urology, Baltimore

38: 1-144 (July) 1937

Radiosensitive Kidney Tumors. B. S. Barringer, New York.—p. 1.
Partial Resections of Kidney: Report of Six Cases and Review of Literature. A. E. Goldstein and B. S. Abeshouse, Baltimore.—p. 15.
Heminephrectomy: Its Indications and Limitations. E. Hess, Erie, Pa.—p. 43.
Unilateral Multicystic Kidney in an Infant. K. D. Lynch and R. F. Thompson, El Paso, Texas.—p. 58.
Postcaval Ureter. H. E. Shih, Peiping, China.—p. 61.
Unusual Ureteral Anomaly: Discussion of Embryology. H. A. R. Kreutzmann, San Francisco.—p. 67.
Perivesical Abscess with Rupture into Bladder Secondary to Intestino-Intestinal Fistula (Sigmoido-Ileal): Case Report. H. A. Fowler, Washington, D. C.—p. 74.
Sacrococcygeal Chordoma: Report of Unusual Case, with Especial Reference to X-Ray Findings. I. E. Nash and N. F. Laskey, New York.—p. 81.
Chorio-Epithelioma of Testis: Report of Case Showing Extensive Metastasis. T. J. Kirwin, New York.—p. 91.
Urethral Injury from Using Metal Covered Bakelite Sheath in Transurethral Prostatic Resection. M. L. Boyd, Atlanta, Ga.—p. 100.
Nonparasitic Chyluria. E. G. Wakefield and G. Thompson, Rochester, Minn.—p. 102.
*Introduction of Avertin as Relaxing Agent in Manipulative Removal of Urethral Calculi. W. D. Jarman and W. W. Scott, Rochester, N. Y.—p. 111.
Nature of Urinary Calculi. J. D. Berke, New York.—p. 118.
New Cystometer Devised to Minimize Present Difficulties. D. W. MacKenzie and S. Beck, Montreal.—p. 131.
Hemostatic Bag Catheter: One Piece Latex Rubber Structure for Control of Bleeding and Constant Drainage Following Prostatic Resection. F. E. B. Foley, St. Paul.—p. 134.
Self-Retaining Bag Catheter for Use as Indwelling Catheter for Constant Drainage of Bladder. F. E. B. Foley, St. Paul.—p. 140.

Tribrom-Ethanol as Relaxing Agent in Removal of Calculi.—Jarman and Scott employed the following technic in twenty-seven patients: After admission to the hospital the patients are placed on sodium acid phosphate and methenamine even though infection is absent. Fluids are forced and medication given, if necessary, to relieve the pain. A number 5 F. ureteral catheter, when possible, is passed by the obstruction to the kidney. This ensures good drainage and protects the kidney. After this bougies or catheters of such size and number as the obstructed ureter will permit are passed to the kidney. The patient is returned to the ward with instructions to drain the catheters in a sterile urinal for forty-eight hours. At the end of this time the patient is brought to the clinic for the tribrom-ethanol injection. This solution is prepared, freshly and aseptically, by dissolving 1 Gm. of tribrom-ethanol crystals in 50 cc. of warm, sterile, distilled water. This 2 per cent solution is then injected, while warm, directly through the indwelling catheter into the kidney pelvis, the amount injected being determined by the pain produced from moderate distention of the pelvis. The catheter is then plugged and the patient requested to sit upright in order to facilitate the passage of some of the solution down along the ureter. This is allowed to remain in contact with the pelvis and ureter approximately fifteen minutes. Then the instruments are withdrawn, at which time they are slowly twisted and more solution is injected directly into the lumen of the ureter. The patient is then instructed to void in the erect posture. In three instances the obstruction due to stone was so marked that with the patients prepared for cystoscopy in the usual manner it was impossible to pass a catheter beyond the calculus. After the rectal administration of tribrom-ethanol as a basal anesthetic to each of these patients, three instruments were easily passed beyond the calculus. With this method the calculus was recovered in twenty-five instances (92.5 per cent). In thirteen instances (48.1 per cent) the stone was recovered as soon as the patient voided.

Maine Medical Journal, Portland

28: 159-186 (July) 1937

The General Practitioners' Responsibilities in Cases of Malignant Disease of Sigmoid and Rectum. E. H. Bennett, Lubec.—p. 161.
Thyroid Disease. H. L. Robinson, Bangor.—p. 164.
Pain in the Kidney Region. A. Riley, Boston.—p. 167.

Military Surgeon, Washington, D. C.

81: 1-80 (July) 1937

Medical Aspects of Italo-Ethiopian War (Oct. 3, 1935-May 9, 1936). A. Castellani.—p. 1.
The Oldest Hospital in America: The Hospital of Jesus of Nazareth in the City of Mexico; Established in 1524, It Is Still in Use. E. E. Hume.—p. 17.
Gas Gangrene in Civil Surgery. F. A. Coller and W. S. Perham.—p. 27.
Review of 100 Amputations. H. P. Timberlake.—p. 39.
The Social Worker's Contribution to Effective Treatment. Faith Seville Lauer.—p. 43.
Military Reading as a Hobby. N. G. Long.—p. 48.
Gunshot Injury of Eyes: Report of Case. W. W. Hendricks.—p. 52.

Minnesota Medicine, St. Paul

20: 411-484 (July) 1937

Medical Service for All Americans. N. B. Van Etten, New York.—p. 411.
Suggested Methods of Improving the Health of the American People: The Program of the Children's Bureau. Martha M. Eliot, Washington, D. C.—p. 418.
Antenatal Treatment of Prenatal Syphilis. R. A. Vonderlehr and Audrey Goss Morgan, Washington, D. C.—p. 423.
Common Type of Emotional Problem Encountered Among College Students. E. M. de Berry, Minneapolis.—p. 427.
Plea Against Defeatism in Malignancy: Report of Some Favorable Cases. A. Schwyzer, St. Paul.—p. 434.
Version and Breech Extraction. R. T. La Vake, Minneapolis.—p. 442.
Obstetric Analgesia: Preliminary Report of New Method. F. E. Kliman and E. M. Lazard, Los Angeles.—p. 444.
Incidence of Tuberculosis and the Deep Chest. S. A. Weisman, Minneapolis.—p. 450.

New England Journal of Medicine, Boston

217: 1-44 (July 1) 1937

Endometrioma of Female Genital Organs. F. A. Pemberton, Boston.—p. 1.
Endometriosis as Cause of Acute Intestinal Obstruction. J. J. Hepburn, Boston.—p. 6.
*Endometriosis of Colon and Rectum with Intestinal Obstruction. R. B. Cattell, Boston.—p. 9.
Failure of Para-Aminobenzenesulfonamide Therapy in Urinary Tract Infections Due to Group D (Lancefield) Beta Hemolytic Streptococci. Eleanor A. Bliss and P. H. Long, Baltimore.—p. 18.
Alterations of Cerebrospinal Fluid Subsequent to Pneumo-Encephalography. R. S. Schwab and T. J. C. von Storch, Boston.—p. 21.
Specialization in Medicine: Subject for Undergraduate Planning. H. Cabot, Rochester, Minn.—p. 24.

Endometriosis of Colon and Rectum.—Among 104 patients with endometriosis who have been treated at the Lahey Clinic, seventeen have had involvement of the sigmoid, colon or rectum (16.3 per cent). Cattell divides these cases of endometriosis into three groups, which are based on the extent of the involvement of the intestine and the indications for treatment: (1) endometriosis of the rectovaginal septum, (2) endometriosis involving the serosal and muscular coat of the intestine owing to its juxtaposition to a generalized endometriosis in the ovaries, tubes or uterus and (3) endometriosis involving the entire intestinal wall. All three groups may show obstructive symptoms, although in the third the obstruction is more marked and is more readily confused with carcinoma. In patients with rectovaginal involvement a biopsy to establish the diagnosis should precede the abdominal operation. If the rectovaginal involvement is extensive and is producing a severe obstruction, a bilateral oophorectomy is indicated, with or without colostomy. Colostomy, if done, is temporary and can be closed after a few months. The treatment of the cases with involvement of the rectosigmoid and rectum due to extensive endometriosis in the pelvis is radical so far as the uterus, tubes

and ovaries are concerned. The author has felt it advisable to, remove the endometrial cysts encroaching on the lumen of the intestine, as well as the ovaries, although the dissection of the cyst on the intestine is likely to be tedious and time consuming if one is to avoid injury to the intestine. No resection of the intestine was performed nor was a colostomy necessary in this group of eight patients. The treatment of discrete implants involving all layers of the sigmoid is a more difficult problem, owing to their infrequent occurrence and their similarity to carcinoma. All four patients in this group (3) were operated on because of intestinal obstruction. One patient was submitted to an abdominoperineal resection because of a diagnosis of carcinoma (the ovaries were not removed), two had a modified Mikulicz type of local resection since their condition was suspected of being endometriosis at the time of operation (the ovaries were removed in one) and the fourth patient had a bilateral oophorectomy without resection of the intestine. In a more recent case in which a solid tumor of the cecum was found, a frozen section diagnosis of endometriosis was of value. In this patient there was no obstruction, so bilateral oophorectomy was done and the cecal tumor was left in situ. In the presence of an intestinal obstruction that is not severe, it seems safe to remove the ovaries without resecting the intestine if the diagnosis of endometriosis is confirmed by frozen section. Resection should be carried out in patients in whom carcinoma cannot be excluded. If the diagnosis is not certain and resection is performed, and if examination of the resected specimen shows that the lesion is an endometrial implant, the ovaries should be removed. The results of the surgical treatment of endometriosis are and should be satisfactory. There has been no operative or subsequent mortality in the seventeen cases in which intestinal involvement was present. Of the five patients in the first group three have no remaining tumor, one has no symptoms although a small mass remains and the fifth patient was treated after biopsy by x-ray therapy and is unimproved. In group 2, five patients are free of symptoms, but, in spite of removal of both ovaries, barium sulfate enemas show narrowing and spasm of the intestine. All the patients in group 3 are well. Of the three patients who had a resection, one developed acute abdominal symptoms that suggested intestinal obstruction three months after operation. These subsided without operative intervention and the patient has subsequently remained well for more than two years.

Northwest Medicine, Seattle

36: 225-258 (July) 1937

Relationship Between Fibroids and Carcinoma of Uterus. F. H. Falls, Chicago.—p. 225.
Roentgen Rays in Treatment of Nonmalignant Conditions. J. M. Hilton, Klamath Falls, Ore.—p. 229.
Chronic, Undermining, Burrowing Ulcer of Abdominal Wall: Case Report. B. P. Mullen, Seattle.—p. 232.
Management of Postoperative Distention: Evaluation of Nasal Catheter Suction Siphon Drainage. B. Davis, Seattle.—p. 234.
Controversial Triad of Digestive Field: Gallbladder Disease, Peptic Ulcer, Colitis. T. R. Brown, Baltimore.—p. 237.
Simplified Technic for Circumcision Without Use of Sutures. J. B. Jacobs, Seattle.—p. 246.
Subconjunctival Injection of Pregl's Iodine in Ocular Infections. C. D. F. Jensen, Seattle.—p. 247.
Femoral Arteriovenous Aneurysm: Report of Case. J. F. Scott, Yakima, Wash.—p. 248.

Ohio State Medical Journal, Columbus

33: 601-720 (June) 1937

Chronic Asthma: Its Evolution and Management. K. D. Figley, Toledo.—p. 617.
*Pyuria in the New-Born. J. F. Miller, Newark.—p. 621.
The X-Ray Study of the Neck. S. Brown and A. Fine, Cincinnati.—p. 626.
Urologic Problems in Gynecology and Obstetrics. W. D. Fullerton, Cleveland.—p. 629.
The American Disease. J. F. Bateman, Columbus.—p. 634.
Female Sex Hormones. R. C. Kirk, New York.—p. 638.
Protein Insufficiency of Clinical Importance in Surgery on Liver. A. W. Oelgoetz, P. A. Oelgoetz and J. Wittekind, Columbus.—p. 643.

Pyuria in the New-Born.—Miller reviews forty-seven cases of pyuria of the new-born from the literature and from the files of the Infants Hospital in Boston. Urinary examination is urged as a procedure in the explanation of symptoms of infection in the new-born and as a routine procedure in the well baby care of the new-born. The incidence of pyuria seems to be about equally divided between the males and the females, in contrast to the disease in older children, in which the females predominate. Symptoms are not always present and when present are those of any acute infection in this age group. All cases which came to necropsy showed inflammation in the kidney substance and none in the pelvic walls. In no case could congenital anomalies of the ureter be said to play a major part in the original etiology; and even in the few cases which showed stenosis and megalo-ureter, every indication seemed to indicate that they were secondary to the infection or incidental. The pathologic observations on these patients seem to match observations made by Helmholz on rabbits infected by the hematogenous route; that pyuria in the new-born is a so-called descending infection, most probably hematogenous in the majority of cases. The most important consideration in treatment is to promote a diuresis, and the most effective method is to give fluid by mouth and dextrose solution intravenously in rather large quantities if there is vomiting; new-born babies seem to have little resistance to Bacillus coli, indicating transfusions. This should be given intravenously, since the best clinical results in infections of the new-born are obtained in this manner. If the patient survives the neonatal period and the pyuria persists, the same considerations hold for investigation and treatment as in any baby with pyuria of comparable age.

Psychoanalytic Quarterly, Albany, N. Y.

6: 139-276 (April) 1937

Configurations in Play: Clinical Notes. E. Homburger, New Haven, Conn.—p. 139.
Don Quixote and Don Quixotism. Helene Deutsch, Boston.—p. 215.
Resolution of Traffic Phobia in Conversations Between Father and Son. L. S. Kubie, New York.—p. 223.
Psychoanalysis, Topologic Psychology and Experimental Psychopathology. J. F. Brown, Lawrence, Kan.—p. 227.
One-Sided Sketch of Jonathan Swift. I. F. G. Duff, London, England.—p. 238.

Public Health Reports, Washington, D. C.

52: 819-872 (June 25) 1937

Purification and Precipitation of Erythrogenic Factor of Scarlet Fever Streptococcus Toxin and Its Antigenic Value. M. V. Veldee.—p. 819.
Typhoid Vaccine: Technic of Its Preparation at the Army Medical School. R. L. Holt and A. P. Hitchens.—p. 829.

52: 873-912 (July 2) 1937

*Studies on Trichinosis: IV. The Rôle of the Garbage-Fed Hog in the Production of Human Trichinosis. M. C. Hall.—p. 873.
Low Temperature Ball Mill for Liberation of Labile Cellular Products. S. Mudd, C. H. Shaw, E. J. Czarnetsky and E. W. Flosdorf.—p. 887.

Trichinosis and the Garbage-Fed Hog.—Hall considers the rôle of the garbage-fed hog in the production of human trichinosis. The commom occurrence of pork scraps, including those not adequately cooked or processed as to kill trichinae, in garbage and swill, and the eating of such scraps by large numbers of swine, are well established facts. There are, usually, approximately from thirty to forty million hogs slaughtered annually in the United States, and the scraps of pork from these millions of hogs are trimmed out in butcher shops, hotels, homes and elsewhere for various reasons. Between one and five of every 100 of these discards, on an average, will contain live trichinae. The feeding to swine of such scraps, as constituents of garbage or swill, constitutes a dependable, large-scale, year-round source of trichinae for swine. Garbage-fed swine have trichinae between three and five times as frequently as do grain-fed swine and hence are specially important as sources of human trichinosis. The garbage-feeding industry, as ordinarily carried on, is dangerous to the health of man and livestock, and often economically unsound.

Southwestern Medicine, Phoenix, Ariz.

21: 187-224 (June) 1937

Our Problems. G. W. Jones, Clovis, N. M.—p. 187.
Ectopic Pregnancy: Analysis of Thirty-Seven Cases and Review of 2,118 Cases. H. H. Varner and L. Green Jr., El Paso, Texas.—p. 191.
Management of Intractable Asthma. C. S. Kibler, Tucson, Ariz.—p. 196.
The Newer General Anesthetics: Vinyl Ether, Evipal, Pentothal and Cyclopropane. B. Herzberg, Phoenix, Ariz.—p. 206.
Chronic Urticaria from Bacterial Proteins (?) Cure by Use of Specialized Vaccine: Case Report. O. H. Brown, Phoenix, Ariz.—p. 210.
Dermatitis Inaugurated by Neoarsphenamine; Continued by Food: Case Report. O. H. Brown, Phoenix, Ariz.—p. 211.

V 10
1937

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An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

49: 263-292 (June) 1937

*Mechanism of Herpes Zoster and Its Relation to Chickenpox. E. S. Stern.—p. 263.
Dermatomyositis: Report of Acute Case, with Commentary. E. Pearl Gretton-Watson.—p. 272.
Some Notes on Treatment of Epithelioma with Radon. J. H. T. Davies.—p. 279.

Relation of Herpes Zoster to Chickenpox.—During the last six years, among a daily average total of 2,050 patients there have been thirty-one cases of herpes zoster in the hospital with which Stern is connected, giving an annual incidence of 2.5 per thousand. The scars and history of a previous attack, five years and twenty-four years before, were found in two cases. The second attack in the first case was so slight that it would not in the ordinary way have come under medical observation, and that in the second case subsequently caused chickenpox in another patient. During these six years all cases of herpes zoster were referred to the author and have received special attention. Five persons were affected with chickenpox; in none of them could a possible source of infection be found, except that four had been in contact with herpes zoster. The approximate incubation periods were fifteen (twice), seventeen and nineteen days, respectively. The eruption of herpes zoster is caused by infection passing from the sensory ganglion down the course of the sensory nerve to the skin. Herpes zoster and chickenpox affect the same areas of skin with equal frequency.

British Journal of Urology, London

9: 101-214 (June) 1937

Suppurations of Renal Parenchyma. G. de Illyés.—p. 101.
Tuberculosis of Epididymis: Four Cases of Urinary Fistula Following Orchidectomy. J. G. Y. Bell.—p. 114.
Granuloma of Urinary Bladder. R. Paschkis.—p. 125.
Cystometry: Studies in Bladder Function: No. VI. Critical Review, with Especial Reference to Microcystometry and Sphincterometry. I. Simons.—p. 132.

British Medical Journal, London

1: 1189-1240 (June 12) 1937

Outbreak of Milk-Borne Scarlet Fever and Tonsillitis in Doncaster. R. Watson.—p. 1189.
Adrenal Cortex: Its Supposed Functions and Suggested Uses of Cortical Extracts. W. N. Kemp.—p. 1194.
*Chronic Agranulocytosis Successfully Treated with Liver. C. R. Das Gupta and L. J. Witts.—p. 1197.
Cancer of Esophagus Treated by Deep X-Ray Therapy (Symptom Free Nearly Two Years). H. Tilley.—p. 1199.
*Oral Administration of Estrin to Premature Babies. Mabel F. Potter.—p. 1201.
Vaccine Treatment of Measles. A. A. Cunningham.—p. 1202.

Chronic Agranulocytosis Successfully Treated with Liver.—Das Gupta and Witts state that a man who had suffered for five years from an unexplained iridocyclitis was discovered during the course of a routine investigation to have a mild chronic agranulocytosis. Sternal puncture revealed arrest of maturation of the myelocytes in the bone marrow. The patient had taken aminopyrine and gold in the past, but no clear evidence of sensitivity to either of these drugs was obtained. There was no response to pyrimidine nucleotides or to pentnucleotide, but on treatment with intramuscular liver extract the white cells returned to normal levels and the bone marrow was restored to normal. The blood has remained normal without further treatment, but the iridocyclitis has not improved greatly.

Oral Administration of Estrogen to Premature Babies.—Since about September 1936, according to Potter, estrogen (progynon) has been used orally for premature infants at the Bristol Maternity Hospital. The dose found satisfactory was 500 international units twice daily. A double dose was dissolved in 2 drachms (8 cc.) of warm (not hot) water and 1 drachm (4 cc.) given as a dose. Since estrogen has been used, none of the eleven premature babies born at the hospital to whom it was administered have died. One sick infant, a boy, was benefited by the preparation. The baby weighed 7 pounds (3,175 Gm.) at birth, was fed artificially, developed gastro-enteritis and his weight fell to 4 pounds 14 ounces (2,210 Gm.) at two weeks. At this stage estrogen was added to the other treatment and the baby eventually did well, gaining half a pound (225 Gm.) weekly and he weighed 12½ pounds (5,670 Gm.) at 4½ months.

Journal of Tropical Medicine and Hygiene, London

40: 137-148 (June 15) 1937

Technic of Blood Transfusion: Description of Improved Continuous Flow Instrument and Needles. M. DeBakey.—p. 137.
Infectivity to Man of Strain of Trypanosoma Rhodesiense Maintained in Sheep: Note. J. F. Corson.—p. 141.

Lancet, London

1: 1445-1504 (June 19) 1937

Change in the Age of Mortality from Diphtheria. R. M. F. Picken.—p. 1445.
Massive Spontaneous Intraperitoneal Hemorrhage. J. Bruce.—p. 1451.
Diaphysectomy in Acute Osteomyelitis. A. L. d'Abreu.—p. 1454.
Mediastinal Ganglioneuroblastoma. F. D. Hart and P. O. Ellison.—p. 1458.

Medical Journal of Australia, Sydney

1: 811-852 (May 29) 1937

*Weil's Disease in Brisbane. D. W. Johnson, H. E. Brown and E. H. Derrick.—p. 811.
Contemporary Neurosurgical Practice. G. Phillips.—p. 819.
Hepatic Necrosis. W. S. Laurie.—p. 825.
Practical Methods of Maintaining Muscular Tone in Pregnancy. Phyllis D. Cilento.—p. 828.

Weil's Disease in Brisbane.—Johnson and his co-workers make a distinction between Weil's disease by restricting this term to the classic type caused by Leptospira icterohaemorrhagiae and use the inclusive term leptospirosis for the leptospiral infections generally. Three cases of classic Weil's disease occurring in Brisbane are reported, one of which was fatal. The first patient was a sewer worker who was infected in 1935. His illness was clinically typical, but pathologic confirmation of the diagnosis was not forthcoming at the time. Reinvestigation of the case seventeen months later showed that the patient's serum still contained, to a diagnostic titer, agglutinins against Leptospira icterohaemorrhagiae. The second patient, although he became ill and died in Brisbane, had left North Queensland, where leptospirosis is endemic, six days previously. Serologic reactions show that the infecting leptospira was closely allied to, and probably identical with, the leptospira of classic Weil's disease. The third patient was a sewer worker. His illness was typical, and the diagnosis was confirmed by the isolation of leptospirae from the blood and by their detection in the urine, as well as by agglutination tests. Both the first and the third patient became ill while working in the same sewer, but at an interval of seventeen months. In a series of eighty-five wild rats examined in Brisbane in 1936, two were found to be carriers of leptospirae. In a second series of 100 rats examined in March 1937, six were found to be carriers of leptospirae. The two strains of leptospirae isolated from rats in 1936 were found to correspond serologically with the Wijnberg strain of Leptospira icterohaemorrhagiae. The human strain isolated, while in general similar to the other, showed some relationship also to an Andaman strain.

Japanese Journal of Obstetrics & Gynecology, Kyoto

20: 217-336 (May) 1937

Gaseous Properties of Umbilical Blood of Normal and Asphyxiated New-Born: Further Studies on Gases in Umbilical Blood: I. M. Noguchi.—p. 218.
Hydrogen Ion Concentration of Umbilical Blood of Normal and Asphyxiated New-Born: Id. II. M. Noguchi.—p. 248.
Mechanism of Radiotherapy: Parts II, III and IV. Y. Kominami.—p. 267.
Are Sexual Hormones Excreted by Sweat Glands? J. Kosakaé, S. Okamoto and T. Kosuge.—p. 279.
Direct Influence of Hormone of Anterior Lobe of Hypophysis on Uterine Movements of the Rabbit. H. Fujimori, T. Ikegami and M. Yoshimura.—p. 284.
Malignant Tumors and Acid-Base Equilibrium: Parts IV to VIII. T. Kageyama.—p. 291
Malignant Tumors and Syphilis: Parts I to VI. J. Taoka.—p. 314.
Simultaneous Application of X-Rays in Operation with "Lapavol." H. Okabayashi.—p. 331.

Archives des Maladies de l'Appareil Digestif, Paris

27: 585-696 (June) 1937

Calcified Hydatid Cysts of Liver. M. Loeper and Jacqueline Brouet-Sainton.—p. 585.
Clinical and Biologic Study of Case of Pancreatic Lithiasis. Lebon, Manceaux, Fabregoule and Dupouy.—p. 614.
*Tuberculosis of Third Portion of Duodenum: Consideration of a Case. J. Grossman, L. Adlersberg and I. Teleman.—p. 621.

Tuberculosis of Duodenum.—Grossman and his associates give the history of a man, aged 32, who was hospitalized on account of periumbilical pains, nausea, severe attacks of vomiting, anorexia and emaciation. The patient was subjected to a thorough examination, to several tests and to a roentgenologic examination of the stomach. The condition was finally diagnosed as stenosis of the third portion of the duodenum. In the course of the operation to which the patient was subjected, a transmesocolic superior gastrojejunal anastomosis was made. However, he died on the day following the operation. The authors describe the necropsy and the microscopic aspects of the tuberculous lesions. On the basis of their macroscopic and microscopic observations they give as the diagnosis ulcerous duodenal tuberculosis following probably tuberculosis of the mesenteric and retroperitoneal lymph nodes, produced by lymphogenic metastasis or by contiguity. The existence of a cicatrized and sclerotic pulmonary focus speaks against the direct production of the duodenal lesion, for the pulmonary focus, not being an open one, the swallowing of infected sputum cannot be incriminated. The transmission by the blood stream must likewise be rejected because of the absence of foci in other visceral organs and the extension of the bacillary lesions in the immediate surroundings of the duodenum. After citing two possible modes of lymphatic transmission of duodenal tuberculosis, the authors point out that in view of the fact that the bronchial lymph nodes are not involved the primary focus was probably not in the lung, and that because of the intensity of the bacillary process in the region of the mesenteric lymph nodes the primary infection must have been in this region.

Bulletin de l'Académie de Médecine, Paris

117: 685-750 (June 22) 1937

Can Tularemia Become Endemic in France? Measures to Be Taken to Prevent Such an Eventuality. M. E. Brumpt.—p. 691.
Treatment of Initial Period of Tuberculosis in Children. R. Debré and M. Lelong.—p. 700.
*New Rat-Bite Fever. A. Lemierre, J. Reilly, A. Laporte and M. Morin.—p. 705.

New Rat-Bite Fever.—Lemierre and his associates call attention to a rat-bite fever that is distinct from sodoku. It is not a spirochetosis but a septicemia, the specific agent of which is a bacterium. They report the history of a man, aged 40, who was bitten by a rat on the dorsal surface of the right index finger. Four days later he had chills and attacks of vomiting and his temperature increased to 104 F. The febrile state persisted for a month and a half. The fever was of the intermittent quotidian type. The elevation of the temperature in the evening was usually preceded by chills and the nocturnal defervescence by profuse sweating. Several days after the onset of the disease, severe articular pains appeared which involved nearly all the joints but particularly the left elbow and wrist. A hydrarthrosis of the left knee supervened after a month, but it disappeared rapidly following a puncture. Moreover, almost from the beginning the patient complained of sore throat and painful swallowing. The diagnosis of sodoku, which at first was thought of, was abandoned in view of the clinical aspects, the negative results of the inoculations in mice and guinea-pigs and the failure of the arsphenamine treatment. Intravenous injections of sodium salicylate were likewise without effect. Two bacteriologic blood cultures were made, one on the nineteenth, the other on the twenty-ninth day. The second disclosed in the aerobic milieu Streptobacillus moniliformis in pure culture. The authors review the literature about this micro-organism, particularly the experimental studies conducted by Levaditi and his collaborators. Then, after citing other cases of rat-bite fever from the literature, they give their attention to the question of the frequency with which Streptobacillus moniliformis occurs in rats. They review studies conducted by Strangeways and describe their own investigation, which corroborated the results obtained by Strangeways; namely, that Streptobacillus moniliformis is a part of the buccopharyngeal bacterial flora of normal rats.

Journal de Médecine de Lyon

18: 373-396 (July 5) 1937

Intracranial Arterial Aneurysms. L. Bourrat, P. Girard and P. Moreau.—p. 373.
*Use of Methenamine in Treatment of Korsakoff's Psychoses. A. Brunerie and P. Moitel.—p. 389.

Methenamine in Treatment of Korsakoff's Psychoses.—Brunerie and Moitel tried the intravenous injejction of large doses of methenamine in patients with Korsakoff's psychosis. Their object was to counteract the polynephritic symptoms and to influence the liver. They report eight cases in which methenamine was administered intravenously by means of ampules of 10 cc., containing 0.25 or 0.5 of methenamine. The injections were given daily, their total number being twelve or twenty. As a result, the polynephritic symptoms were greatly improved, the enlarged liver decreased rapidly in size, the appetite increased, the diarrheas disappeared and, parallel with these improvements, a considerable amelioration in the mental disorder was observable.

Journal de Médecine de Paris

57: 530-546 (July 1) 1937

*Otitic Phenomenon as Precursory Sign of Measles. M. Bespaloff.—p. 535.

Otitic Phenomenon as Precursory Sign of Measles.—Bespaloff directs attention to an otitic sign which he observed in a number of patients who later developed measles. When called to see a child with fever, he has made it a general practice to examine the ears carefully. In doing so he found that in those with latent measles, during the period of the invasion of the disease, an otic phenomenon was observable; namely, redness of one or of both tympanic membranes. This redness persists without aggravation as long as does the febrile condition. During this period the author noted also, in nearly all cases, symptoms of nasopharyngeal catarrh. With the appearance of the exanthem, which coincides with the fall in the temperature, the changes in the tympanic membrane lessens. A rose coloration remains for about twelve hours; then it disappears like the catarrhal symptoms. The author reports nine cases which illustrate the various stages of the phenomenon.

Presse Médicale, Paris

45: 971-986 (June 30) 1937

*Pains Provoked by Excitation of Central Termination of Great Sympathetic: Cardiac and Pulmonary Pains in Course of Splanchnicotomies. R. Leriche.—p. 971.
Pathogenesis and Pathologic Physiology of Renal Dwarfism and Connected Syndromes. R. Debré, J. Marie and M.-L. Jammet.—p. 972.
Some Problems of Suprarenal Physiopathology. G. Maranon.—p. 974.
Hemiplegias by Thrombosis of Internal Carotid. E. Moniz, Almeida Lima and R. de Lacerda.—p. 977.
Staphylococcic Osteomyelitis of the Long Bones and Typhoid. P. Moiroud.—p. 980.

Cardiac and Pulmonary Pains in Course of Splanchnicotomies.—After outlining this method of sympathectomy, Leriche describes two cases. The first patient, undergoing splanchnicotomy under spinal anesthesia, complained of severe pain in the heart when the left splanchnic nerve was not yet completely cut. Following procaine hydrochloride infiltration, the pain ceased immediately and the section could be completed. Several days later, in cutting the right splanchnic nerve of another patient, also under spinal anesthesia, the patient complained of severe pain in the right lung. Here again infiltration of the central end arrested the pain and the section could be completed without further complaint from the patient. In two other cases the section on the left side caused sudden cardiac pain. The author thinks that the fact that the pain appeared at the moment of resection indicates that it can have no other explanation than that it is the result of an excitation of the centripetal fibers, and the instantaneous results of the administration of procaine do not contradict this. From then on the author always resorted to infiltration before cutting, even when the operation was performed under general anesthesia. In

trying to explain these pains, he points out that one can hardly assume a direct connection or a simple centripetal phenomenon. The only plausible hypothesis is a vasoconstrictor reflex, which acts at the level of the heart and lung and elicits the pain. In view of the strict localization and unilaterality, an intermediate epinephrine effect cannot be assumed, since this would have produced more diffuse effects. One must therefore ask oneself whether normally the central termination of the great sympathetic may not produce sympathetic vasomotor phenomena. Evidently this has to be verified experimentally. But the author thinks that the facts must be accepted for the present. He shows further that they are of interest in connection with certain pathologic phenomena. He calls attention to the appearance of anginose crises in connection with meals. These are usually explained as the result of a mechanical action on the heart, of the compression of the diaphragm by a distended stomach, without thinking that the patient with angina pectoris eats little, that the stomach is filled from above and not from below up, and that the air filled pocket is hardly capable of counteracting the normal diaphragmatic tonicity. The author considers it more reasonable to assume a nervous phenomenon or a circulatory reflex. Moreover, if splanchnic excitation can have a pulmonary repercussion, it may be assumed also that the same excitation can be carried into the abdominal region.

Pediatria, Naples

45: 481-576 (June 1) 1937

Pulmonary Tuberculosis in Infants. M. Miraglia del Giudice.—p. 481.
*Glycemia and Ketonemia Following Epinephrine Injection in Infants. Nora Andreis.—p. 497.
Seric Adenitis: Cases. D. Marani Bernardo.—p. 521.
Hemilateral Scleroderma in Child, Aged 4 Years: Case. A. Barcaglia. —p. 533.

Glycemia and Ketonemia Following Epinephrine Injections.—Andreis made determinations of the glycemia and ketonemia following an intramuscular injection of 0.3 mg. of a 1:1,000 solution of epinephrine in forty-five infants, both normal and suffering from certain diseases with or without involvement of the liver functions. As a control for the efficacy of epinephrine, the behavior of the leukocytes during the reaction was followed. The author found that glycemia, ketonemia and the leukocytes do not follow parallel curves. Oxybutyric acid increases more than preformed acetone and diacetic acid. The reaction of glycemia and ketonemia in normal infants is slight, reaches the peak within the first half hour following the injection, and returns to normal in an hour and a half. Acetonuria does not appear or, if it does, it is slight. The reaction is intense in infants who have ketonemia before the test, as well as in those suffering from nutritional disorders and diseases of the respiratory tract. Generally the peak of the reaction is reached in an hour or an hour and a half after the injection and then glycemia and ketonemia return to normal. Acetonuria, which is related to the intensity of the glycemic and ketonemic reaction, appears in most of the patients but not all who have a retarded intense reaction. The highest figure of ketonemia following an intramuscular injection of epinephrine in normal infants is 5.77 mg. per hundred cubic centimeters of blood. The total ketonemia and glycemia after injection of epinephrine in infants suffering from nutritional and respiratory diseases are, respectively, 31.19 and 0.32 mg. per hundred cubic centimeters of blood. The spontaneous ketonemia that is present in infants with a fasting stomach is not related to the function of the liver. The author concludes that the intense and prolonged increase of glycemia and ketonemia after an injection of epinephrine shows insufficiency of the liver and that the epinephrine test is of diagnostic value.

Rinascenza Medica, Naples

14: 329-364 (May 31) 1937

*Roentgen Therapy of Inguinal Lymphogranuloma. C. Guarini.—p. 335.
Pick's Syndrome: Case. C. Molè.—p. 339.
Treatment of Grave Chronic Malaria. P. Corsonello.—p. 343.

Roentgen Treatment of Inguinal Lymphogranuloma.—Guarini advises repeated roentgen irradiations in small doses in the treatment of subacute inguinal lymphogranuloma. He gives the irradiations with a current of 180 kilovolts, 3 milliamperes, a focal distance of 40 centimeters and a filter of 5 mm. of lead and 2 mm. of aluminum, through fields of 10 by 15 cm., which receive one third of the erythema dose, that is, 250 or 300 roentgens, during each treatment. The irradiations are given at intervals of four or five days. The number of irradiations depends on the evolution of the disease when the roentgen treatment begins to be administered and the local reaction to the irradiations. As a rule from four to twelve complete the number of treatments. The most favorable results are obtained when the treatment is given early. The treatment is harmless and the disease is controlled more rapidly than with other treatments. The fear of the formation of a larger number of adhesions when the latter are already formed is not justified. The author has resorted to the treatment in eleven cases. Two patients discontinued the treatment. The remaining nine patients obtained complete cure of the disease, which has been verified several years after completion of the treatment.

Prensa Médica Argentina, Buenos Aires

24: 1285-1330 (June 30) 1937

Surgery in Cancer of Left Colon: Clinical, Surgical and Anatomic Study. A. Ceballos and H. Taubenschlag.—p. 1285.
*Intraspinal Alcohol Treatment. J. J. Spangenberg, L. Munist and F. Guagnini.—p. 1298.
Physiopathologic and Anatomic Knowledge Indispensable for Clinical Interpretation of Goiter. D. Brachetto-Brian.—p. 1308.
Subchronic Parotitis with Uveal Complications of Heerfordt's Type. C. Weskamp and E. Adrogué.—p. 1317.
Unexpected Delivery: Medicolegal Testimony in Case. E. López Bancalari and J. Delpiano.—p. 1320.

Intraspinal Alcohol Treatment.—According to Spangenberg and his collaborators, the intraspinal injections of alcohol in the treatment of peripheral neuralgia are dangerous. The injected alcohol may cause muscular atrophy and degeneration of the cells, sphincter disturbances, impotence, muscular hypotony and difficulty in walking. The authors' statement is supported by the results of experiments and by those obtained in a group of seven patients. Microscopic studies of the spinal cord, spinal ganglions and nerve roots of rabbits which were given intraspinal injections of absolute alcohol showed processes of neurolysis, lymphocytic infiltration and degeneration of the nerve tissues. The patients were treated for sciatic neuralgia, obliterating arteritis with incipient gangrene, tabetic radiculitis and pleuropulmonary cancer. In all cases the alcohol injections were administered with the patient in the lateral position on the normal side, with the buttocks or the cephalic part of the thorax elevated, in relation to the thorax. The dose varies from 0.25 to 1 cc. of pure alcohol and is injected slowly. It may be repeated fifteen or twenty days after the first injection if necessary. In five cases the results of the treatment were transient, in one case the type and intensity of pain did not change and in one the treatment controlled pain definitely, as has been verified two years after discontinuation of the treatment. There were no complications in the case in which the pain was not modified. In the remaining six cases, disorders such as muscular atrophy and hypotonus, impotence and sphincteric and ambulatory disturbances took place. The authors believe that intraspinal alcohol treatment may be resorted to only in case of inoperable cancer of the rectum, colon, prostate, testicle, uterus and lumbosacral column.

Semana Médica, Buenos Aires

44: 1-60 (July 1) 1937. Partial Index

Hans Finsterer's Excluding Resection of Duodenal Ulcers: Modified Technics of D. Del Valle, Finochietto and Parlavechio. M. L. Insúa. —p. 1.
Primary Genital Tuberculosis of Neck of Uterus. P. Figueroa Casas and L. A. Belizan.—p. 14.
Intradermal Reaction with Finzi Exotuberculin. C. Floriani.—p. 22.
*Nephropexy: Therapeutic Value. H. D. Berri.—p. 25.
Familial, Hereditary, Primary Amenorrhea. A. Aguilar.—p. 29.

Value of Nephropexy.—Berri considers nephropexy of value in the treatment of renal ptosis when the operation follows definite indications, which are the presence of renal pain or of urinary disturbances. The diagnosis of renal ptosis is made by pyelography and excretion urography. Patients suffering from renal ptosis uncomplicated by renal pain or urinary disorders obtain satisfactory results from the use of an elastic abdominal belt without resorting to an operation. The failures of nephropexy depend on a defective technic, especially in fixing the kidney in a low situation, or using nonabsorptive suture material, or else on the presence of chronic appendicitis.

The coexistence of the latter points to the advisability of doing an appendectomy during nephropexy. The technic of Salleras for nephropexy gives the best results. It consists, in short, of making an incision from the tenth rib and the sacrolumbar tissues to the superior anterior iliac spine, freeing the kidney and upper part of the ureter from nearby adhesions of muscular and conjunctive tissues and then fixing the kidney in the proper situation. In cases of bilateral renal ptosis the operation is done only on the painful side. The author reports satisfactory results with the technic in twenty-two cases. In all cases the results of the operation, as to the correction of the position of the kidney, were verified by pyelography.

Münchener medizinische Wochenschrift, Munich

84: 1001-1040 (June 25) 1937. Partial Index

Contributions of University of Göttingen to Development of Anatomy and Physiology. M. Voit.—p. 1001.
*Cholesterol Metabolism in Glycogen Storage Disease. H. Beumer.—p. 1007.
Influence of Saponins on Viosterol Calcification and Sex Cycle. E. Frey.—p. 1009.
Modern Therapeutic Problems in Psychiatry. G. Ewald.—p. 1019.
*Determination of Time of Death on Basis of External Inspection and Examination of Corpse. B. Mueller.—p. 1021.

Cholesterol Metabolism in Glycogen Storage Disease.—Beumer reports the clinical history of a boy in whom glycogenosis was complicated by xanthomatosis. The cholesterol content of the serum was greatly increased and was not influenced by a diet with a high or with a greatly restricted cholesterol and fat content. The cutaneous manifestations and the hepatic swelling were not influenced during the three months period when the patient was on a diet that was free from cholesterol and from fat. From these observations the author concludes that the xanthomatosis, which existed in addition to the glycogenesis, was not dependent on alimentary influences but rather was caused by an endocrine disturbance in the cholesterol metabolism. This suggests that the hypercholesteremia existing in uncomplicated glycogenesis is likewise due to endocrine factors.

Determination of Time of Death.—Mueller says that a practitioner, even though he may not need to give expert testimony on the question of how long a body has been dead, should at least know what factors deserve attention so that he may record them for future reference, should he be the first physician called to see the body. Discussing the inspection of the eyes, the author points out that Tonelli believes that during the first twenty-four hours after death the pupil can readily be deformed by pressing with the finger on the bulb, but that this is no longer possible if more time has elapsed. The condition of the cornea is more important for practical purposes. Twenty-four hours after death it begins to be turbid as the result of drying. However, if the eyes of the cadaver are open, this drying process will begin much earlier (about one and three quarters hours after death). It is therefore important that the physician report whether the eyes of the cadaver were open or closed. In cadavers that have been in the water, it should be remembered that light eyes may assume a brownish color (after twenty-four hours has elapsed). This is important not only for the determination of the time of death but also for the identification. The author questions the often repeated statement that the beard still grows after death, pointing out that this growth is only apparent and due to the fact that the turgor of the skin decreases, the hair becoming more prominent as a result. Further he discusses the death spots, which may appear at both sides of the neck thirty minutes after death. Such spots at the side of the neck are often erroneously regarded as pressure points and as an indication of strangling. The physician should try to determine whether these spots can be pressed away. If similar obliterable reddish spots appear gradually on other parts of the cadaver, the spots at the neck may be regarded as ordinary death spots. If strangling has actually taken place, subcutaneous hemorrhages result which cannot be pressed away. A mere hyperemia that may result from strangling disappears rapidly on the cadaver, even if it was quite noticeable during life. The death spots pale in response to pressure at first, but later (twenty-four hours or longer after death) they no longer do so. The behavior of the spots should be carefully tested in this respect. In examining the skin of the patient, the hair may be found to stand up (goose flesh formation). This does not necessarily indicate that the person was greatly alarmed but may be the effect of cold to which the cadaver was exposed after death. The facial expression of the cadaver is of no importance, since the musculature relaxes after death. Rigor mortis may develop instantaneously, but this is rare. Usually it begins at the temporomaxillary joint, from one to two hours after death and progresses downward and it disappears again in the reverse order after from forty-eight to sixty hours (depending on the outside temperature). Whereas the cooling of the skin of the cadaver is not sufficiently uniform to be of definite value, the cooling of the internal organs is slower and has more regularity. In this connection the author stresses the importance of measuring the rectal temperature.

Zeitschrift für Kinderheilkunde, Berlin

58: 685-808 (June 3) 1937. Partial Index

Familial Diffuse Cerebral Sclerosis in Early Childhood. Flora Eisclsberg.—p. 702.
*Peculiarities of Distribution of Salt and Water in Organism of Nurslings. E. Kerpel-Fronius.—p. 726.
Three Forms of Klippel-Feil's Syndrome, Their Differentiation and Accompanying Nervous Symptoms. J. R. Dreyfus.—p. 739.
Circumscribed Calcinosis (Calcium Gout) and Sclerodactylia During Childhood. J. Brock.—p. 751.
Constitutional Pathology and Progressive Muscular Dystrophy. H. Günther.—p. 757.
*Significance of Cutaneous Manifestations in Acute Articular Rheumatism. E. Traub.—p. 769.
*Question of Hypersplenia. W. Schmidt.—p. 790.

Distribution of Salt and Water in Nursling.—Kerpel-Fronius shows that the higher chloride, sodium and water contents as well as the lower protein, rest nitrogen and potassium contents of the muscles of new-born infants are the manifestation of a water distribution in the muscles which differs from that of adults. The total water content of the muscles for each gram of protein decreases considerably during the time of growth. This dehydration, however, does not signify a decrease in the water combination of the protein, for the quantity of the cell water per gram of protein remains practically constant. The dehydration of the muscles is exclusively at the expense of the interstitial water. The muscles of the new-born have a water distribution much like that existing during edema in adults. The comparatively large amount of interstitial water in the organism of nurslings probably plays a part in the hydrolability of nurslings.

Cutaneous Manifestations in Acute Articular Rheumatism.—Traub shows that the allergic factors which were discovered to play a part in acute articular rheumatism give new etiologic significance to symptoms accompanying it. By interpreting the local rheumatic manifestations as allergic-hyperergic tissue reactions, it is no longer important whether rheumatism is an infectious disease by itself. According to Rössle, various organisms and different ports of entry may produce allergizing diseases, the decisive factor being the affinity of toxins to certain tissues. Considered from this point of view, rheumatism is similar to syphilis and tuberculosis, for these too are infectious, make the involved organism allergic and cause a complicated interrelation between hypersensitivity (hyperergy) and subsensitivity (immunity). In all these disorders the causal organism produces a primary lesion in some part of the organism and at the same time causes sensitization. This primary stage is followed by a secondary one, which in the case of rheumatism, as in tuberculosis and syphilis, is characterized by great sensitivity to toxins and a tendency to inflammations. In case of new attacks by the antigen, the already hyperergic organism reacts with general reactions and multilocular allergic-hyperergic inflammations. The similarity of rheumatism to syphilis and tuberculosis is demonstrated also by the appearance of cutaneous manifestations during the secondary stage. Annular erythema and rheumatic urticaria can be explained as toxic-allergic efflorescences, and nodose rheumatism as a peripheral hyperergic inflammation in a sensitized organism is symptomatologically and prognostically related to them. The author cites observations in several cases which prove that the peripheral manifestations accompany similar clinical processes and that for this reason their relationship must be considered probable. Annular erythema, rheumatic urticaria and nodose rheumatism accompany a generalization of the

rheumatic infection and usually appear when the cardiac values, the nervous system or the serous membranes become involved. All three processes have common relations to fluctuations in the allergy of the organism and, as indicators of the generalization of the process, they have considerable prognostic significance.

Hypersplenia. — Schmidt reports the histories of a girl, aged 10, and a boy, aged 14, both of whom had severe anemia with leukopenia and thrombopenia. Since the usual therapeutic methods failed to produce the desired effects, the enlarged spleens were removed. The splenectomy was followed by a noticeable improvement in the anemic condition and by an increase in the leukocytes and the platelets. The most noteworthy aspect of the two spleens was their size. In the girl it weighed 260 Gm., in the boy 950 Gm., when the normal weights would have been 70 and 85 Gm., respectively. After describing the histologic aspects of the extirpated spleens, the author cites Heilmeyer's report about patients in whom anemia was accompanied by splenic enlargement and by morphologic changes and reduced resistance in the erythrocytes. On the basis of these observations, Heilmeyer assumed the existence of a primary splenic disease for which blood destruction is characteristic and which he designates as hemolytic hypersplenia. The author points out that the two described cases cannot be identified with Heilmeyer's hemolytic hypersplenia, because neither the shape nor the resistance of the erythrocytes was changed and there were no signs of increased blood destruction in the spleen. Nevertheless, he regards the disorders in the reported cases as hypersplenia, reasoning that if it did not produce anemia by destruction it might produce it by exerting an inhibiting effect on the blood formation in the bone marrow. He points out that Naegeli regards hypersplenia in this light by ascribing the inhibiting action to the endothelium of the splenic sinuses. Kretz is of the same opinion and M. B. Schmidt talks of a "depressor hypersplenia." The connection between spleen and bone marrow supposedly takes place by way of the blood stream, by means of a substance that is formed in the endothelium of the splenic sinuses. After pointing out that it is difficult to furnish the direct proof of such a function of the endothelium of the splenic sinuses, the author discusses whether the sinus hyperplasia in the second reported case was accompanied by an increased function. He reaches the conclusion that in this case the anemia probably was caused by the hyperplasia of the splenic sinuses, the favorable effect of the splenectomy as well as some literature reports seemingly justifying this conclusion; but he does not consider generalizations permissible, pointing out that the first case and other reports indicate the involvement of many other factors, some of which are still unknown.

Zeitschrift für klinische Medizin, Berlin

133: 283-422 (June 9) 1937. Partial Index

Hypophysis and Hypertension. W. Bergfeld and H. Meessen.—p. 283.
*Purpura with Hemophilia-like Temporary Disturbance in Coagulation. W. Tschopp.—p. 293.
Auto-Oscillations of Normal Lung. G. Landes.—p. 308.
Investigations on Water Economy: Comparison of Hemoglobin Content and Quantity of Urine in Volhard's and Kauffmann's Tests. K. Brucke.—p. 331.
Iodine Metabolism in Diseases of Thyroid. L. Scheffer.—p. 343.
*Circulatory Complications in Diabetes Mellitus. P. Radnai and R. Weisz.—p. 355.
Determination of Value and Healthfulness of Various Rye Breads on Basis of Their Capacity to Stimulate Salivary and Gastric Secretion. G. Lemmel.—p. 367.

Purpura with Hemophilia-like Disturbance in Coagulation.—Tschopp's report is a contribution to the symptomatology of atypical diseases of the blood. He describes the history of a woman who has been under his observation for years. She presented the clinical aspects of purpura, which, however, was complicated by a disturbance in the blood coagulation like that existing in hemophilia. Otherwise the blood was normal. In the course of time the retardation of the coagulation disappeared and the coagulation values became normal. On the basis of this history the symptoms of hemorrhagic diatheses and of hemophilia are discussed and especial attention is given to the question of hemophilia in women. This problem has not been definitely solved as yet. The author shows that the occurrence of hemophilia in women has not been definitely demonstrated, nor can it be absolutely excluded. The case reported in this paper can be classified in none of the known groups of hemorrhagic diathesis. It has been designated as purpura with temporary hemophilia-like disturbance in the coagulation, possibly as a temporary thrombokinase deficiency of unknown origin.

Circulatory Complications of Diabetes Mellitus. — Radnai and Weisz direct attention to the circulatory complications of diabetes mellitus. Their observations were made in 400 cases. Electrocardiographic tests were made in 260 of these and it was found that 40 per cent showed changes. Cardiac decompensation was discovered in 20 per cent, anginose conditions in 10 per cent, vascular changes of the fundus oculi in 30 per cent and peripheral arteriosclerosis in 8 per cent. It was observed that the electrocardiographic changes as well as the appearance of cardiac disorders is primarily dependent on the age of the patient and secondly on the height of the blood sugar. Insulin therapy or the quantity of insulin seems to be of no importance in the development of cardiac disorders. It was impossible to prove that diabetes mellitus is a causal factor in hypertension. The cardiac disturbances of diabetic patients are not caused by the hypertension that may exist but rather by the metabolic disorder that accelerates and increases the development of vascular changes. Besides the age of the patient it is chiefly the blood sugar value and the duration of the metabolic disorder that influence the development of cardiac disorders. The degenerative processes in the fundus oculi are the result of the metabolic disturbance. Their development too, aside from the age of the patient, is dependent chiefly on the height of the blood sugar and the glycosuria. The author emphasizes that a thorough clinical examination of a diabetic patient requires not only an examination of the urine and the blood but also an inspection of the retina and an electrocardiographic test. In case of pains in the extremities, an oscillometric examination is necessary. Oscillometric changes and the appearance of symptoms of peripheral arteriosclerosis are dependent on the age of the patient and on the duration of the metabolic disorder. If the blood sugar is unusually high, cardiac and retinal disturbances predominate; but peripheral arteriosclerosis appears generally in those persons in whom the metabolic disorder is one of long standing but in whom the blood sugar is comparatively low so that insulin is given either in small doses or not at all.

Wiener Archiv für innere Medizin, Vienna

30: 301-406 (June 30) 1937. Partial Index

*Action of Ether Anesthesia, Evipan Anesthesia (Sodium Salt of N-Methyl-Cyclo-Hexenyl-Methyl Barbituric Acid) and Lumbar Anesthesia on Blood Sugar. A. Atnan and E. Fenz.—p. 301.
Disappearance of Glycosuria in Diabetes Mellitus as Result of Amyloid Degeneration of Kidneys. A. Sattler.—p. 313.
Mikulicz Disease as Systemic Disease of Salivary Glands. Berta Aschner.—p. 327.
Studies on Problem of Serum Bilirubin. R. Teuß.—p. 337.
*Automatic and Extrasystolic Manifestation of Original Stimuli of Identical Periodicity: Clinical Aspects of Heterotopic Stimulus. C. Bloch.—p. 365.
Acquired Hemolytic Icterus After Malaria. K. Tschilow.—p. 401.

Action on Blood Sugar of Various Anesthetics.—In order to determine how anesthetics influence the sugar metabolism, Atnan and Fenz studied the blood sugar curve before, during and after various types of anesthesia in nondiabetic and in diabetic patients. The types of anesthesia investigated were ether anesthesia, intravenous anesthesia and spinal anesthesia. It was found that the intravenously induced anesthesia influences the blood sugar only slightly, so that it may be employed in diabetic patients without special precautions. In comparing the effects exerted on the blood sugar by spinal and ether anesthesias, the authors found that after spinal anesthesia the increase is much less than after ether anesthesia. However, the increase in the blood sugar lasted longer (from six to twenty-four hours) after spinal than after ether anesthesia. In a mild case of diabetes, the increase in blood sugar was less noticeable than in normal persons. The authors conclude that spinal anesthesia is not contraindicated in diabetes mellitus.

Aspect of Heterotopic Stimulus Formation. — Bloch analyzes the electrocardiograms of two patients which demonstrate in what manner impulses of the same heterotopic stimulus may become manifest as extrasystoles as well as in the form of automatic beats. In the first case, regular blockage of the

emissions of a rapid heterotopism led to slow automatism. If the impulses are enitted in their actual stimulus periodicity, there develop (if it takes place after an automatic beat) apparent extrasystoles or (if it is the period of a compulsory stimulus formation after a transmission beat) real extrasystoles. In the second case an automatic period is twice as long as the coupling (the period of compulsory stimulus formation) of neighboring extrasystoles, identical in form, which are bound to transmissions. The automatic period develops by emission blockage of a rapid heterotopism, the periodic length of which represents the coupling of the extrasystole. In both cases automatic and extrasystolic beats can be traced not only to a common stimulus former but also to a stimulus formation process of identical rhythm, which in case of regular emission blockage of its stimuli produces automatic beats, and in case of emission blockage produces extrasystoles.

Wiener klinische Wochenschrift, Vienna

50: 1019-1050 (July 9) 1937. Partial Index

Clinical Aspects and Therapy of Cancer of Colon. H. Finsterer.—p. 1019.
*Total Thyroidectomy in Treatment of Cardiac and Vascular Diseases That Are Refractory to Medicinal Treatment. R. Singer.—p. 1025.
Use of Ecbolics and Their Dangers. H. Heidler.—p. 1029.
Significance of Sports Within Psychotherapy. O. Kauders.—p. 1032.
*Influence of Malarial Therapy on Histopathologic Skin Process in Progressive Muscular Dystrophy. A. Rottmann.—p. 1037.
Ectomy of Tonsils by Means of Short Wave Coagulation. V. Frühwald and L. H. Stieböck.—p. 1038.

Total Thyroidectomy in Cardiac and Vascular Diseases.—Following a review of the literature, Singer reports the experiences with total thyroidectomy in cardiac and vascular diseases made at a Viennese hospital. He describes and discusses several cases of cardiac and vascular diseases in which thyroidectomy proved helpful and reaches the conclusion that it is indicated in cardiac defects and hypertension with chronic decompensation, in which digitalis or strophanthin have little or no effect. Especially suited for thyroidectomy are cases of refractory dyspnea, for of all the symptoms of decompensation dyspnea is most promptly counteracted by thyroidectomy. This explains the success of thyroidectomy in the cases of severe dyspneic emphysema. The operation is indicated also in refractory angina pectoris and finally in obliterating endarteritis. If the success of thyroidectomy is at least partly due to a reduction in the oxygen requirements, it is to be expected that those cases promise the best surgical results which have an increased basal metabolism before the intervention. The author advises that patients whose metabolism shows minus values should be excluded from total thyroidectomy. The lowest metabolic rate at which thyroidectomy was done at his hospital was plus 16. After pointing out that the operation probably exerts its favorable effect by relieving the circulation (through the reduction in the process of oxidation) and by thus enabling the circulatory organs to respond more readily to medicinal treatment, the author admits that the method still has certain defects, which are connected with the totality of the thyroidectomy. In order to exclude these, his cligic is now investigating to what extent the subtotal resection of the thyroid might produce the same therapeutic effects without resulting in the slight myxedematous complications. That these complications are slight is proved by the fact that at the author's clinic it has never been necessary to administer thyroid preparations. To be sure, in some of the thyroidectomized patients mild myxedematous symptoms appeared, such as swelling of the lids, dry exfoliating skin and falling out of the hair. However, these manifestations usually disappeared again spontaneously after one or two months.

Malarial Therapy in Progressive Muscular Dystrophy.—After reviewing a previous report on malarial therapy of progressive muscular dystrophy in which he had demonstrated that, at the onset and during progressive exacerbations of the dystrophy, malarial therapy promises favorable results, whereas in late cases it may arrest the disease process and induce a favorable general condition, Rottmann describes his studies on the histologic changes produced by the malarial therapy. He says that it was tried in muscular dystrophy because of its activating effect on the defense powers of the organism. He reports histologic studies in three cases in three different stages. The histologic studies on the skin were made before and after the therapy. They reveal an anatomic regression of the chronic infiltrative process and are a further proof that vaccination malaria exerts a specific action on the tissues.

Polska Gazeta Lekarska, Lwów

16: 503-566 (July 4) 1937. Partial Index

New Opinion on Process of Tuberculosis and Its Dependence from Local and General Specific Immunization. K. Lewkowicz.—p. 534.
Pathogenesis of Combined Diseases of Spinal Nervous System. J. Rothfeld.—p. 537.
Influence of Tyrosine on Rate of Glycero-Adenylo-Guanylo Phosphates in Rabbit Serum in Hyperthyroid Diseases. K. Pelczar and S. Murza-Murzicz.—p. 543.
Value of Tryptophan Test in Meningitis of Children. S. Progulski.—p. 545.
Hypotony of Oxygen in Arterial Blood and Hypertony of Pulmonary Circulation. A. Oszacki.—p. 546.
*Diagnostic and Prognostic Value of Electrocardiogram in Heart Disease During Diphtheria. E. Szczeklik.—p. 549.
Clinical Importance of Autonomic System. W. Spychala.—p. 553.

Value of Electrocardiogram During Diphtheria.—Szczeklik states that the electrocardiogram during the course of diphtheria has been of great value for the estimation of the condition of the heart muscle. He has taken electrocardiograms of sixty patients: forty children ranging in age from 6 months to 10 years, and twenty adults. Antitoxin had been administered and general treatment instituted in all cases. Five lethal cases from heart failure showed, at necropsy, degenerative changes of the heart muscle. The changes which have been observed in the electrocardiogram could be divided into two groups: disorders of the heart muscle and disorders of the circulation. In conclusion he says that: 1. Diphtheria may cause damage to the heart muscle and the conduction system, as well as to the irrigation system, the damage being mostly done to the muscle. The damage to the irrigation system is rarer and usually complicated with damage to the conduction system of the heart muscle. 2. The changes in the electrocardiogram showing heart muscle damage may appear on the third day of the disease. The histopathologic changes of the heart in fatal cases are often those of degeneration of the muscle, and more rarely those due to blood extravasation and hypostasis. The latter may appear on the eighth day of the disease and was observed in one case of the series. 3. In lethal outcome during the course of toxemic diphtheria attributed to the heart itself there were found some typical changes in the electrocardiogram and, histopathologically, in the system of heart conduction. Changes in the heart muscle itself as the cause of death have been found to be rarer. 4. The electrocardiographic changes observed consisted of tachycardia, slowing of circulation and arrhythmia, and even extrasystolic arrhythmia, which, however, do not always result in death.

Finska Läkaresällskapets Handlingar, Helsingfors

80: 293-388 (April) 1937

Completely Irregular Heart Action or Auricular Fibrillation. F. Saltzman.—p. 295.
Bacteriologic and Serologic Observations During Cerebrospinal Meningitis Epidemic. T. Packalén.—p. 313.
*Irreversible Allergic Changes in Blood Vessels: Glomerulonephritis, Periarteritis Nodosa and Rheumatic Arteritis. C. Ehrström.—p. 332.
Blood Transfusion in Gastric Hemorrhages. H. E. Blomquist.—p. 339.

Allergy and Changes in Blood Vessels.—Ehrström says that experimental and clinical investigations during recent years seem to show that the blood vessel changes in diffuse glomerulonephritis, periarteritis nodosa and rheumatic arteritis represent different forms of allergic manifestations in immunization processes in the organism. The fact that allergic factors have been demonstrated on the occurrence of blood vessel changes in malignant hypertonia, eclampsia of pregnancy and atypical verrucous endocarditis indicates how unlike the anatomopathologic and clinical picture may be, depending on the course of the allergic reaction. In glomerulonephritis, periarteritis nodosa and rheumatic arteritis, in which the allergic reaction leads to irreversible changes, bacterial products, mostly from hemolytic streptococci, act as the antigen. In the literature, cases of periarteritis nodosa on an allergic basis are mentioned in which the antigen was of nonbacterial kind (among other things, pollen). The author describes a case of allergy to foodstuffs in which administration of the antigen—cheese, milk and eggs—caused violent shock, followed by fever, symptoms, from the joints and kidneys and bilateral pleuritis.